Chapter 2 Alternatives Including the Proposed Action

2.1 NEPA Guidance for Alternatives

The Council on Environmental Quality regulations for implementing the procedural provisions of NEPA require consideration of several alternatives, or a range of alternatives, to be evaluated in addition to the proposed action and the environmental impacts of activities (in this instance, fish harvest) under each of these management alternatives to be evaluated. Five alternatives are presented for analytical purposes. These can be evaluated from information and analysis provided in Chapter 3 (Affected Environment), Chapter 4 (Environmental Consequences) and in the Regulatory Impact Review (Appendix C) and Regional profile appendices (Appendix D). Together this information presents the issues and impacts, thus providing the basis for choice among alternatives by the agency and the public.

2.2 Background and History of Protection for Steller Sea Lions in these Groundfish Fisheries

2.2.1 Steller Sea Lion ESA Listing and Critical Habitat Designation

The Steller sea lion species in the U. S. was listed as threatened in 1990. Justification was based on evidence of a major decline in their abundance throughout most of their range, but most acutely in the core region from the Kenai Peninsula to Kiska Island (Braham *et al*. 1980, Merrick *et al*. 1987). In this region, counts of adult and juvenile Steller sea lions had declined by about 80% since the late 1950s. On May 5, 1997, NMFS reclassified Steller sea lions into two distinct population segments under the ESA (62 FR 24345). The reclassification was based on biological information collected since the species was listed as threatened in 1990. The Steller sea lion population segment west of 144°W (a line near Cape Suckling, AK) was reclassified as endangered; the listing for the remainder of the U.S. Steller sea lion population remained as threatened.

Steller sea lion critical habitat is listed in 50 CFR §226.202. All major Steller sea lion rookeries, haulouts, and foraging areas are identified on Figures 2.2-1 through 2.2-8 (map packet). NMFS recognizes that the locations of critical habitat listed in 50 CFR §226.202 are out of date. Advances in technology and repeated surveys to these areas has resulted in more precise and accurate location estimates. NMFS intends to update the locations as soon as practicable. Critical habitat includes the following areas:

- A terrestrial zone that extends 3000 feet (0.9 km) landward from the baseline or base point of each major rookery and major haulout.
- An air zone that extends 3,000 feet (0.9 km) above the terrestrial zone, measured vertically from sea level
- An aquatic zone that extends 3,000 feet (0.9 km) seaward in State and Federally managed waters from the baseline or basepoint of each major haulout in Alaska that is east of 144˚ W longitude.
- An aquatic zone that extends 20 nm (37 km) seaward in State and Federally managed waters from the baseline or basepoint of each major rookery and major haulout in Alaska that is west of 144˚ W.

Critical habitat also includes three special aquatic foraging areas in Alaska; the Shelikof Strait area, the Bogoslof area, and the Seguam Pass area.

- Shelikof Strait Foraging Area

  Critical habitat includes the Shelikof Strait area in the Gulf of Alaska which consists of the area between the Alaska Peninsula and Tugidak, Sitkinak, Aiaktilik, Kodiak, Raspberry, Afognak and Shuyak Islands (connected by the shortest lines): bounded on the west by a line connecting Cape Kumlik (56˚38" /157˚26´W) and the southwestern tip of Tugidak Island (56°24' /154°41'W) and bounded in the east by a line connecting Cape Douglas (58°37'N / 153°15'W) and the northernmost tip of Shuyak Island (58°37'N / 152°22'W).

- Bogoslof Foraging Area

  Critical habitat includes the Bogoslof area in the Bering Sea shelf which . . . consists of the area between 170˚00´W and 164˚00´W, south of straight lines connecting 55˚00´N/170 00´W and 55˚00´N/168˚00´W; 55˚30´N/168˚00´W and 55˚30´N/166˚00´W; 56˚00´N/166˚00´W and 56˚00´N/164˚00´W and north of the Aleutian Islands and straight lines between the islands connecting the following coordinates in the order listed:

  52°49.2'N/169°40.4'W; 52°49.8'N/169°06.3'W; 53˚23.8´N/167˚50.1´W; 53˚18.7´N/167˚51.4´W; 53˚59.0´N/166˚17.2´W; 54˚02.9´N/163˚03.0´W; 54˚07.7´N/165˚40.6´W; 54˚08.9´N/165˚38.8´W; 54˚11.9´N/165˚23.3´W; 54˚23.9'N/164°44.0'W

- Sequam Pass Foraging Area

  Critical habitat includes the Seguam Pass area which consists of the area between 52˚00´N and 53˚00´N and between 173˚30´W and 172˚30´W.

Since the designation of critical habitat in 1993, NMFS has collected additional information on the habitat requirements of Steller sea lions. NMFS has identified an additional 19 haulouts which have been observed to have substantial usage by Steller sea lions. For purposes of this analysis, the 19 additional haulouts and an area around the Bogoslof foraging area are included in Steller sea lion protection measures alternatives. Occasionally the term critical habitat is used inclusively to describe both the formally designated critical habitat and the more recently recognized, but not formally designated, haulouts.

As a result of the listing of Steller sea lions under the ESA, and in recognition of the continued declines, a series of management actions have been taken, and ESA section 7 consultations on the GOA and BSAI FMPs completed, since 1991 primarily focused on the endangered, western population and the potential impacts to Steller sea lions by the groundfish fisheries.

2.2.2 History of Steller Sea Lion Protection Measures

A brief review of fishery management measures that have been implemented to date to protect sea lions, as shown in Figure 2.2-1 and described in more detail below.

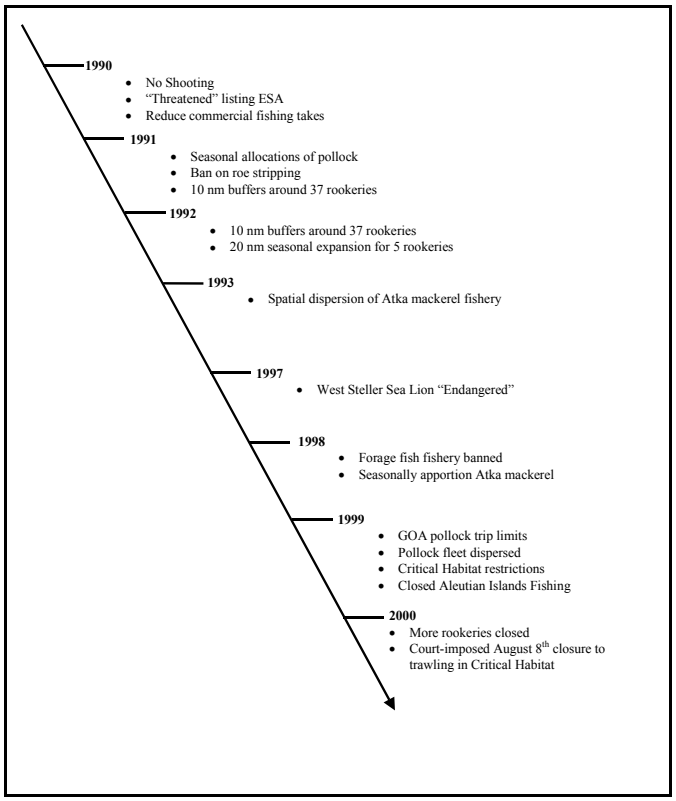


Figure 2.2-1 Timeline of management actions taken to reduce potential impacts of fishing on Steller sea lions.

No shooting: In 1990, the NMFS enacted a law prohibiting shooting at or within 100 yards of Steller sea lions. Before then large numbers of sea lions were thought to have been intentionally shot by fishermen and others.

Limits on incidental kills: When Steller sea lions were listed as threatened, the number of Steller sea lions that could be killed incidental to commercial fishing was reduced from 1,350 to 675 animals. In recent years, however; mortality of the western stock of Steller sea lions due to commercial fishing has averaged about 35 animals per year, of which 14 per year were taken in Alaska groundfish fisheries.

No entry buffer zones: Three mile no-entry zones were also established at the time of listing in 1990. No vessels are allowed to operate within 3 miles of principal rookeries east of 144° W longitude. Limits on approach by land (½ mile around the rookeries) were also instituted to minimize disturbance and reduce opportunities for individuals to intentionally shoot the animals.

No-trawl zones: In 1991, 27 trawl closure areas were implemented. These zones were established to reduce disturbance of feeding Steller sea lions around rookeries. Trawling is prohibited year-round within 10 nautical miles of the rookeries, and some extend to 20 miles during the pollock A- season.

No-pollock fishing zones: In 1999, at the advice of the NMFS, the Council prohibited trawling for pollock within 10 or 20 nautical miles around most major haulout areas for Steller sea lions. All pollock fishing has been prohibited in the Aleutian Islands since 1998.

Seasonal dispersion of fisheries: Fisheries have been seasonally allocated to reduce potential impacts of localized depletion of prey. In 1991, pollock roe stripping was banned, and the Bering Sea pollock fishery was split into a winter fishery (A-season) and a late summer fishery (B-season). In June 1998, the Council adopted a regulatory amendment to seasonally apportion Atka mackerel in the Aleutian Islands. In 1999, the Council adopted regulations to further split the pollock fishery in the Gulf of Alaska and Bering Sea into four separate seasons, with limits on the amount that can be taken in each of those seasons. A limit on how much pollock a vessel can catch per trip was established for vessels in the Gulf of Alaska to reduce localized depletion of pollock.

Spatial dispersion of fisheries: Beginning in 1994, the Atka mackerel harvest limit was apportioned among smaller subareas of the Aleutian Islands area to prevent localized depletion. In June 1998, the Council adopted a regulation to reduce fishing for Atka mackerel near rookeries to further reduce potential for localized depletion of Atka mackerel within critical habitat areas. In 1999, at the urging of the NMFS, the Council adopted regulations to disperse the pollock fishery outside of Steller sea lion critical habitat in the Gulf of Alaska and Bering Sea. In the Bering Sea, for example, major adjustments by the pollock fleet have been made to keep total removals of pollock from critical habitat areas to less than 50% of the quota.

Precautionary harvest limits on Steller sea lion prey: Catch specifications for some groundfish stocks have incorporated safeguards for Steller sea lions. Concerns for sea lions have resulted in explicit conservative harvest rates for pollock, Atka mackerel, and other known prey species. For example, the maximum acceptable biological catch for Bering Sea pollock in 2001 was 2,125,000 mt, but the total allowable catch limit was set at only 1,400,000 mt. While all groundfish stocks off Alaska are considered to be healthy, the concern for sea lions and a greater focus on multi-species, ecosystem oriented management has reinforced the Council's already conservative approach to the quota setting process.

Prohibition on directed fishing on forage fish: In 1997, the Council adopted FMP amendments that prohibit directed fishing for forage fish, which are prey for groundfish, seabirds, and marine mammals. Under this amendment, protection is provided for forage fish species such as capelin, sand lance, myctophids, and a host of other forage species.

2.2.3 Development of Alternatives for this Analysis

On November 30, 2000, NMFS released a comprehensive Biological Opinion (2000 Biological Opinion) on the groundfish fisheries of the BSAI and GOA, pursuant to section 7 of the Endangered Species Act. The 2000 Biological Opinion concluded that fisheries for pollock, Pacific cod, and Atka mackerel jeopardize the recovery of Steller Sea lions and adversely modify their critical habitat due to competition for prey and modification of their prey field. To mitigate this situation, the 2000 Biological Opinion included a set of sea lion protective measures (termed the Reasonable and Prudent Alternative, RPA), which included closure areas and a long-term experimental monitoring program.

On December 9, 2000, the Council moved to not adopt the conclusions of the 2000 Biological Opinion, or the RPAs as contained therein. When the Council was informed that the 2000 Biological Opinion's RPA would be implemented though emergency rule for 2001, and would require a plan amendment for 2002 fisheries, the Council decided that additional alternatives should be considered.

On December 18, 2000, The Consolidated Appropriations Act 2001 was passed into Public Law (Pub. L. 106-554). A one-year phase-in of the RPA regulations is required. Included in this phase-in are the global control rule and existing fishery closure zones.

On January 22, 2001, NMFS issued an emergency rule to implement changes to the 2001 Alaska groundfish fisheries effective January 18, 2001, to be consistent with the requirements of the MSFCMA, the ESA, and additional requirements imposed by Congress in Pub. L. 106-554, the Consolidated Appropriations Act 2001. The rule implements new protection measures, and extends regulations establishing Steller sea lion protection measures for the BSAI pollock and Atka mackerel fisheries and the GOA pollock fishery. At its February 5-12, 2001, meeting, the Council sent a letter to the Secretary of Commerce requesting that he use

his executive authority to ensure adequate harvest levels are made available for small boats and inshore processors for 2001 fisheries per the mandates of Pub. L. 106-554.

On January 12, 2001, the Council convened a one day meeting in Seattle to hear from the NMFS regarding a one-year phase in of sea lion protection measures for 2001. The Council recommended that an RPA Committee be established to make recommendations for the second half of 2001 and develop an alternative RPA for the 2002 plan amendment analysis. The Council set forth an initial set of alternatives based on the previous RPAs recommended by the Council, as well as the September 2000 draft EA/RIR developed by NMFS for the Pacific cod fisheries (NMFS 2000c).

At its February 5-12, 2001, meeting, the Council received the Scientific and Statistical Committee (SSC) review of the 2000 Biological Opinion and received several reports on Steller sea lion research, and discussed the workplan for the 2002 amendment package. The SSC concluded that the 2000 Biological Opinion was scientifically deficient. The Council discussed issues to be examined by an independent scientific review team and the National Academy of Sciences. The Council reviewed a 'roadmap' for amendment development, and reviewed an initial set of alternatives for analysis. The Council chairman appointed RPA Committee members that included 21 members from the fishing community, the conservation community, NMFS, the SSC, and State agencies. The RPA Committee met numerous times to review SSL science, the 2000 Biological Opinion RPA, and new fishery and survey information. Meetings were held on February 10, February 20, March 6-7, March 26-29, April 9, May 9-11, and May 21-24, 2001. Public testimony was received at all meetings.

At its April 11-16, 2001, meeting, the Council adopted emergency rule measures for the second half of 2001, based on recommendations from the RPA Committee, Advisory Panel, and public. The Council's recommended emergency rule included a series of closure areas and season changes that will increase protection for Steller sea lions and reduce impacts to fisheries and coastal communities. The full suite of measures contained in the motion, and a map of these areas was made available to the public on the NMFS and the Council's web site.

The RPA Committee developed a set of alternative fishery management measures to assist the Council in forwarding to NMFS a complete alternative to the 2000 Biological Opinion RPA. It was presented to the Council at its June 6-11, 2001 meeting and was refined by the Advisory Council, Scientific and Statistical Committee and Council during that meeting. By the close of the June 2001 meeting, the Council had agreed to a set of five alternatives for analytical purposes. Each alternative incorporated a wide variety of changes to existing fisheries management regulations. A brief list of the chosen alternatives is provided below, with more thorough descriptions in section 2.3.

Alternative 1 No action. Regulatory measures implemented by emergency rule, and designed to protect Steller sea lions, would expire. *Note this alternative is presumed to violate the Endangered Species Act.*

Alternative 2 The low and slow approach. This alternative is derived from the Draft Programmatic SEIS for the Alaska groundfish fisheries (NMFS 2001a). Essentially, the approach is to establish lower total allowable catch levels (TACs) for pollock, Pacific cod, and Atka mackerel, prohibit trawling in critical habitat, and implement measures to spread out catches through the year.

Alternative 3 The restricted and closed area approach. This alternative is the RPA detailed in the November 30, 2000, Biological Opinion. Essential elements of this approach are to establish large areas of critical habitat where fishing for pollock, Pacific cod, and Atka mackerel is prohibited, and to restrict catch levels in remaining critical habitat areas.

Alternative 4 The area and fishery specific approach. This alternative was developed by the Council's RPA Committee. This approach allows for different types of management measures in the three areas (AI, BS, and GOA). Essential measures include fishery specific closed areas around rookeries and haulouts, together with seasons and catch apportionments. Three options for closure areas are examined for this alternative.

Option 1: Chignik small boat exemption.
Option 2: Unalaska small boat exemption.
Option 3: Gear specific zones for GOA Pacific cod fisheries.

Alternative 5 The critical habitat catch limit approach. This alternative is derived from the suite of RPA measures that were in place for the 2000 pollock and Atka mackerel fisheries, and measures considered for the Pacific cod fishery that include seasonal apportionments and harvest limits within critical habitat. Essentially, this alternative limits the amount of catch within critical habitat to be in proportion to estimated fish biomass.

Preferred Alternative

As part of the NEPA process undertaken following the comprehensive biological opinion and Council rejection of the associated RPA, it was the expectation that if an alternative could be formulated that was found to be in compliance with ESA and other federal laws and E.O.s, and not be as economically costly as the RPA in NMFS 2000 Biological Opinion, it would be designated the preferred alternative. Alternative 4 apparently proves that it is possible, thus it is designated the preferred alternative for purposes of this draft environmental impact analysis.

NMFS reinitiated ESA Section 7 consultation for the fisheries management measures embodied in Alternative 4, resulting in a Draft 2001 Biological Opinion and incidental Take Statement (Appendix A). The Draft 2001 Biological Opinion concludes this suite of management measures would not likely jeopardize the continued existence of the western or eastern populations of Steller sea lions, nor would it adversely modify the designated critical habitat of either population. It is important to point out that the Draft 2001 Biological Opinion does not ask if Alternative 4 is beneficial for the Steller sea lion (i.e. helps the Steller sea lion population size recover to some specified level so that the species could be delisted), but rather asks if Alternative 4 will jeopardize the Steller sea lions chances of survival or recovery in the wild. While the Draft Biological Opinion has concluded that no, Alternative 4 does not jeopardize the continued survival and recovery of the Steller sea lion, it none-the-less suggested four reasonable and prudent measures to include with Alternative 4 as necessary and appropriate to minimize impacts of the fisheries to Steller sea lions. The suggested measures are: (1) monitoring the take of Steller sea lions incidental to the BSAI and GOA groundfish fisheries; (2) monitoring all groundfish landings; (3) monitoring the location of all groundfish catch to record whether the catch was taken inside critical habitat; and (4) monitor vessels fishing for groundfish inside areas closed to pollock, Pacific cod and Atka mackerel to see if they are illegally fishing for those species.

Between Draft SEIS and Final SEIS, the alternative designated as preferred may change. Whether it does depends on the final determination in the final biological opinion, as well as on whether the Council seeks further changes and refinements to any of the analytical alternatives.

2.3 Detailed Description of Alternatives

NMFS established a framework approach to avoiding jeopardy and adverse modification of Steller sea lion critical habitat in the 1998 and 1999 biological opinions on the pollock fisheries that allowed input by the Council and the public. NMFS's purpose was to seek ideas and recommendations for management measures to 1) protect waters around rookeries and haulouts to prevent localized depletion of prey and the potential for competition, 2), temporally disperse the fisheries to reduce the probability of localized depletions by pulse or derby fishing, and 3) spatially disperse the fisheries to reduce the probability of localized depletions from concentration of catch in local areas. NMFS used these three principles as the foundation for its RPA framework to avoid jeopardy and adverse modification. The intent was to avoid competition in the winter and around rookeries and important haulouts, and to disperse the fisheries outside of those time periods and areas to ensure that local harvest rates were consistent with the overall harvest rate. The alternatives considered in this analysis (except the no action alternative) were all developed around this framework approach.

The alternatives range from the no action alternative, which may allow the potential for competition with fisheries and Steller sea lions for prey resources, to Alternative 2 which, if adopted, would essentially separate the fisheries from Steller sea lions. Alternatives 3, 4, and 5 take a slightly different approaches in providing protection for Steller sea lions. The main difference between each of the alternatives is the types of fisheries allowed inside critical habitat, and where within critical habitat the fisheries would be allowed. More details of each alternative are provided in this section. Table 2.3-1 summarizes the management measures proposed under each alternative. Figures 2.3-1 through 2.3-8 (map packet) show the closure areas under each alternative.

Sections 2.3.1 through 2.3.5 provide a more detailed explanation of each alternative, including examples of what the 2001 total allowable catch (TAC) would have been for pollock, Pacific cod, and Atka mackerel under each of the alternatives. The following sector and gear allocations apply to the process for estimating TACs under each alternative.

- The final 2001 harvest specifications for the groundfish fisheries of the Bering Sea and Aleutian Islands management area (BSAI) and the Gulf of Alaska (GOA) are used as a basis for the TAC estimates (66 FR 7276; January 22, 2001) and the 2000 SAFE document is used as a basis for the maximum Acceptable Biological Catch (ABC) figures assumed under Alternative 2. (NPFMC, 2000c,d).

- BSAI pollock allocations under the American Fisheries Act (AFA) apply equally under all alternatives. Once an overall pollock TAC is established, 10% is allocated to the Community Development Quota (CDQ) Program. NMFS then estimates an appropriate amount of pollock to reserve to account for the incidental catch of pollock in non-pollock directed fisheries. In 2001, NMFS reserved 4% of the pollock TAC as an incidental catch allowance (ICA). Finally, after the CDQ allocation and ICA are subtracted, the remaining pollock TAC is divided among the sectors as follows: 50% to the inshore sector, 40% to catcher/processors, and 10% to motherships.

- CDQ reserves of 7.5% of the TAC for Pacific cod and Atka mackerel in the BSAI.

- Atka mackerel in the BSAI is allocated 2% to vessels using jig gear and 98% to vessels using other gear. No gear allocations for Atka mackerel exist in the Central or Western Aleutian Islands areas.

- Pacific cod in the BSAI is allocated 2% to vessels using jig gear, 51% to vessels using hook-and-line gear or pot gear, and 47% to vessels using trawl gear. The trawl gear allocation is further allocated 50% to catcher vessels and 50% to catcher/processors. The hook-and-line and pot gear allocation of Pacific cod is further allocated 80% to catcher/processors using hook-and-line gear, 0.3% to catcher vessels using hook-and-line gear, 18.3% to vessels using pot gear, and 1.4% to catcher vessels less than 60 feet length overall that use either hook-and-line or pot gear.

- Pacific cod in the Gulf of Alaska is allocated 90% to the inshore sector and 10% to the offshore sector.

2.3.1 Alternative 1: No Action

Under this alternative, the regulatory measures implemented by emergency rule in 2001 to protect Steller sea lions, would expire. The measures that would stay in place include regulations in effect to protect Steller sea lions in 1999 and regulations implemented in 1999 and 2000 for the BSAI Atka mackerel fisheries. The mapable features of this alternative are illustrated in Figure 2.3-1 (map packet). The Steller sea lion protection measures that would continue to exist under Alternative 1 are:

Applicable to all fisheries:

- No transit zones within 3 nm of 37 rookeries.

- Closure within 10 nm of 37 rookeries to all trawling year-round, some extending to 20 nm on a seasonal basis.

Applicable to the Atka mackerel fisheries:

- Two seasons with TAC apportionments would be established: January 20 to April 15 (50%); September 1 to November 1 (50%).

- Harvest limits would be established in critical habitat: (40% inside critical habitat in 2002 and thereafter)

- A Vessel Monitoring System (VMS) unit is required on all vessels participating in the Atka mackerel fisheries in the Aleutian Islands area (541, 542, or 543).

The following examples illustrate how the 2001 TACs would be specified under Alternative 1.

Bering Sea Pollock

Prior to the implementation of the emergency interim rules for Steller sea lion protection measures, the Bering Sea pollock TAC was apportioned between an A season (45%) and a B season (55%). Applying the seasonal and sector allocations to the 2001 Bering Sea pollock TACs would result in the following apportionments (values in metric tons).

Season	A	B	Total
Season Dates	1/20 to 4/15	9/1 to 11/1	
Season Apportionment	45%	55%	
CDQ (10%)	63,000	77,000	140,000
AFA Total (non-CDQ)	544,320	665,280	1,209,600
ICA	na	na	50,400
Total	607,320	742,280	1,400,000

Aleutian Islands Pollock

If the emergency interim rules expired, the Aleutian Islands pollock TAC would be the full 2001 ABC of 23,800 mt. Although two seasons existed for the Aleutian Islands pollock TAC in 1999, 100% of the TAC was allocated to the A season (January 20 to April 15) with any pollock quota remaining after the A season allowed to be harvested in the B season (September 1 to November 1). For this example, we assume that all of the Aleutian Islands pollock TAC would be harvested during the A season because pollock is more valuable during the roe season. For the Aleutian Islands, we assume an ICA of 2,000 mt because that amount has been reserved as an incidental catch allowance in recent years when a directed fishery for pollock has been prohibited in the Aleutian Islands as a Steller sea lion protection measure. The Aleutian Islands pollock TAC would be distributed as follows under Alternative 1 (values in metric tons).

Season	A
Season Dates	1/20 to 4/15
Season Apportionment	100%
CDQ (10%)	2,380
AFA Total (non-CDQ)	19,420
ICA	2,000
Total	23,800

Bering Sea and Aleutian Islands Pacific Cod

Under Alternative 1, the 2001 BSAI Pacific cod TAC of 188,000 mt would be allocated among the CDQ and non-CDQ fisheries. Pacific cod is available for trawl gear between January 20 and December 31 and available to fixed gear between January 1 and December 31. No specific incidental catch allowance is applied to the Pacific cod TAC, although consideration of the expected incidental catch of cod is made when determining directed fishing allowances for the non-CDQ fisheries. The distribution of the BSAI Pacific cod take under Alternative 1 would be as follows (values in metric tons):

CDQ (7.5%)	14,100
Total non-CDQ	173,900
Trawl (47%)	81,733
Fixed gear (51%)	88,689
Jig (2%)	3,478
Total Pacific cod TAC	188,000

Bering Sea and Aleutian Islands Atka Mackerel

The Atka mackerel TAC in the Bering Sea and Aleutian Islands is divided among three areas: (1) Bering Sea and Eastern Aleutian Islands (BS/EAI), (2) Central Aleutian Islands (management area 542), and (3) Western Aleutian Islands (management area 543). Under Alternative 1, seasonal allocations apply to the non-CDQ fisheries, but do not apply to the CDQ fisheries. Critical habitat area catch limits exist for the CAI and WAI areas, but not for the BS/EAI area. For this example, we assume the critical habitat area catch limits that will apply in 2002 and thereafter under the current regulations (50% of the TAC in each area and season). The Atka mackerel TAC under Alternative 1 would be apportioned among areas and allocated among users as follows (values in metric tons):

Bering Sea/Eastern Aleutian Islands

Season	A	B	Total
Season Dates	1/20 to 4/15	9/1 to 11/1	
Season Apportionment	50%	50%	
CDQ (7.5%) - no seasons			585
Jig gear (2%) - no seasons			144
Other gear (trawl)	3,536	3,535	7,071
Total			7,800

Central Aleutian Islands

Season	A	B	Total
Season Dates	1/20 to 4/15	9/1 to 11/1	
Season Apportionment	50%	50%	
CDQ (7.5%) - no seasons			2,520
Non-CDQ	15,540	15,540	31,080
Total			33,600
Critical Habitat Area Catch Limit	40%	40%	
CDQ - no seasons			1,008
Non-CDQ	6,216	6,216	12,432

Western Aleutian Islands

Season	A	B	Total
Season Dates	1/20 to 4/15	9/1 to 11/1	
Season Apportionment	50%	50%	
CDQ (7.5%) - no seasons			2,093
Non-CDQ	12,904	12,903	25,807
Total			27,900
Critical Habitat Area Catch Limit	40%	40%	
CDQ - no seasons			837
Non-CDQ	5,162	5,161	10,323

Gulf of Alaska Pollock

Alternative 1 would revert to the ABC and TAC management measures for GOA pollock that were in place through 1998. These measures included apportioning the annual pollock ABC among management areas based on the most recent (in this example estimates for 2001) estimate of average distribution of biomass. Within the management areas of the Western and Central GOA fishing season dates and seasonal apportionments are unchanged from 1998, while in the Eastern GOA no seasonal apportionments were made in 1998. The 2001 GOA pollock TACs under Alternative 1 would be apportioned as follows (values in metric tons):

Season	A	B	C	Total
Season Dates (trawl gear)	1/20 to 4/1	6/1 to 7/1	9/1 to 12/31	
Season Apportionment	25%	35%	40%	
Area				
Shumagin (610)	8,618	12,066	13,790	34,474
Chirikof (620)	10,606	14,848	16,969	42,423
Kodiak (630)	4,992	6,989	7,988	19,969
Subtotal (Western/Central)	24,216	33,903	38,747	96,866
West Yakutat (640)				2,484
Total				99,350

* No seasonal apportionment of pollock in Area 640.

Gulf of Alaska Pacific Cod

Alternative 1 would implement ABC and TAC management measures for GOA Pacific cod that were in place through 1998. These measures included apportioning the annual Pacific cod ABC among management areas based on the most recent (in this example estimates for 2001) estimate of distribution of biomass. The 2001 GOA Pacific cod TACs under Alternative 1 would be apportioned as follows (values in metric tons):

Season	Annual
Season Dates	1/1 to 12/31 fixed gear 1/20 to 12/31 trawl gear
Seasonal Apportionment	100%
Area	
Western GOA	18,300
Central GOA	26,988
Eastern GOA	3,560
Total	48,848

Note: Does not include allocation between inshore (90%) and offshore (10%) components.

2.3.2 Alternative 2: Low and Slow Approach

This alternative is derived from the Draft Programmatic SEIS for the Alaska groundfish fisheries (NMFS, 2001a). Essentially, the approach is to establish lower total allowable catch levels (for pollock, cod, and mackerel), prohibit trawling in critical habitat, and implement measures to spread out catches through the year. The mapable features of this alternative are illustrated in Figure 2.3-2 (map packet). Details are as follows:

Applicable to all fisheries:

- No transit zones within 3 nm of 37 rookeries.
- No groundfish fishing within 3 nm of haulouts.
- No trawling for any groundfish species within Steller sea lion critical habitat.

Applicable to pollock, Pacific cod, and Atka mackerel fisheries:

- Four seasons would be established for pollock, cod, and mackerel fisheries with equal seasonal TAC apportionment: January 20 to March 15 (25%), April 1 to June 1 (25%), June 15 to August 15 (25%), September 1 to Dec 31 (25%). Two week stand-downs would be established between seasons with no rollover of TAC allowed
- "Seasonal exclusive area registration would be required, such that vessels must register for one fishing area at a time for each pollock, cod, or mackerel season." For purposes of this EIS, this proposal is assumed to mean that a vessel owner must register with NMFS each season before they participate in directed fisheries for pollock, Pacific cod, or Atka mackerel. They may register for only one area per species per season. They would be prohibited from participating in a directed fishery for a species in more than one area in a season.

Applicable to pollock fisheries

- The Aleutian Islands would be closed to directed pollock fishing.

- Maximum TACs would be established as a percentage of the maximum ABC as follows:
  Bering Sea pollock TAC: 74.5% of maximum permissible ABC.
  GOA pollock TAC: 44.8% of maximum permissible ABC.

- Separate TACs would be established for Bering Sea pollock east and west of 170° West longitude, and GOA pollock TACs would be established by management area (e.g., 610, 620, 630) and for the Shelikof Strait.

- Maximum daily catch limits would be established for the fleet of vessels fishing in the pollock fisheries as follows:

  Bering Sea pollock: 5,000 mt.
  GOA pollock: 1,000 mt.

Applicable to the Pacific cod fisheries

- The Pacific cod TAC would be split from a combined BSAI TAC to separate TACs for the Eastern Bering Sea and the Aleutian Islands based on the biomass distribution of the stock.

- Maximum TACs would be established as a percent of the maximum ABC as follows:

  Bering Sea cod TAC: 71.8%.
  Aleutian Islands cod TAC: 71.8%.
  GOA cod TAC: 55.0%.

- Separate TACs would be established for Bering Sea cod east and west of 170° West longitude, separate AI cod TACs would be established by management area (e.g., 541, 542, 543); and GOA cod TACS would be established by management area (e.g., 610, 620, 630) and for the Shelikof Strait. (Note in below examples that NMFS does not have adequate biomass distribution information to estimate a separate Shelikof Strait Pacific cod TAC.)
- Maximum daily catch limits would be established for the fleet of vessels fishing in the cod fisheries as follows:

  Bering Sea cod: 600 mt.
  Aleutian Islands cod: 600 mt.
  GOA cod: 400 mt.

- Foraging area (Seguam, SCA, Shelikof) catch limits would be established at 10% of survey biomass estimate. (Note in below examples that NMFS does not have adequate biomass distribution information to estimate a Pacific cod foraging area catch limit for Seguam Pass or Shelikof Strait.)

- VMS would be required on vessels directed fishing for cod within critical habitat.

- A zonal approach would be implemented for BSAI and GOA Pacific cod fisheries, with buffer zones that apply to distance from rookeries and haulouts as follows.

0-3 nm	3-10 nm	10-20 nm	Outside 20 nm
no fishing	pot vessels with 60 pot limit, all jig vessels, and longline vessels < 60'	all pot vessels, all jig vessels, all longline vessels < 60', and catcher longliners >60'	all vessels and gears

Applicable to Atka mackerel fisheries:

- Maximum Atka mackerel TAC would be established at 33% of the maximum ABC.
- Separate TACs would be established for AI management areas (e.g., 541. 542, 543).
- A maximum daily catch limit of 300 mt would be established for vessels directed fishing for Atka mackerel.

The following examples show how the 2001 TACs would be specified under Alternative 2

Bering Sea Pollock

- The Bering Sea pollock TAC would be 74.5% of the maximum permissible ABC (1,842,000 mt x .745 = 1,372,290 mt).
- The total Bering Sea pollock TAC of 1,372,290 mt would be distributed equally among four seasons as follows (values in metric tons):

Season	A	B	C	D	Total
Season Dates	1/20 to 3/15	4/1 to 6/1	6/15 to 8/15	9/1 to 12/31	
Season Apportionment	25%	25%	25%	25%	
Total	343,073	343,072	343,073	343,072	1,372,290

- The seasonal apportionment of the BS pollock TAC would be divided between areas east of 170˚ W longitude and west of 170˚ W longitude based on the seasonal distribution of the pollock biomass as follows:

Season	A	B	C	D
East of 170˚ W	52%	45%	39%	39%
West of 170˚ W	48%	55%	61%	61%
Total	100%	100%	100%	100%

- The following summarizes how the 2001 BS pollock TAC would be allocated by area, season, and sector under Alternative 2 (values in metric tons):

East of 170° W					
Season	**A**	**B**	**C**	**D**	**Total**
Season Dates	1/20 to 3/15	4/1 to 6/1	6/15 to 8/15	9/1 to 12/31	
Total TAC by Season	178,398	154,383	133,798	133,798	600,377
CDQ Reserve	17,840	15,438	13,380	13,380	60,038
Remaining TAC	160,558	138,944	120,418	120,418	540,338
- 4% ICA	6,422	5,558	4,817	4,817	21,614
AFA Total (non-CDQ minus ICA)	154,136	133,387	115,602	115,602	518,727
Inshore (50%)	77,068	66,693	57,801	57,801	259,363
Catcher/proc. (40%)	61,654	53,355	46,241	46,241	778,088
Motherships (10%)	15,414	13,339	11,560	11,560	51,873
Total AFA by Season	154,136	133,387	115,602	115,602	518,726
West of 170° W					
Season	**A**	**B**	**C**	**D**	**Total**
Season Dates	1/20 to 3/15	4/1 to 6/1	6/15 to 8/15	9/1 to 12/31	
Total TAC by Season	164,675	188,690	209,274	209,274	771,913
CDQ Reserve	16,467	18,869	20,927	20,927	77,191
Remaining TAC	148,207	169,821	188,347	188,347	694,722
- 4% ICA	5,928	6,793	7,534	7,534	27,789
AFA Total (non-CDQ minus ICA)	142,279	163,028	180,813	180,813	666,933
Inshore (50%)	71,140	81,514	90,406	90,406	333,466
Catcher/proc. (40%)	56,912	65,211	72,325	72,325	1,000,399
Motherships (10%)	14,228	16,303	18,081	18,081	66,693
Total AFA by Season	142,279	163,028	180,813	180,813	666,933

Daily catch limit: In addition, there would be a maximum daily catch limit of 5,000 mt for all vessels fishing in the BS pollock fisheries.

Aleutian Islands Pollock: Directed fishing for pollock would be prohibited under Alternative 2. The 2001 TAC of 2,000 mt would be specified for the incidental catch of pollock in non-pollock fisheries.

Bering Sea and Aleutian Islands Pacific Cod

In 2001, one Pacific cod TAC was specified for the entire BSAI. Alternative 2 would require separate Pacific cod TACs for east of 170° W long., west of 170° W long., Eastern Aleutian Islands (541), Central

Aleutian Islands (542), and the Western Aleutian Islands (543). The following procedure is used to estimate the Bering Sea portion of the Pacific cod TAC under Alternative 2.

- Alternative 2 would require that the TAC would be 71.8% of the maximum permissible ABC. The maximum permissible ABC for BSAI Pacific cod was 214,000 mt in 2001. This ABC is divided between the Bering Sea and Aleutian Islands based on the distribution of Pacific cod biomass in those areas, which is estimated to be 88% in the Bering Sea and 12% in the Aleutian Islands (NMFS 2000a).

  BS portion of Pacific cod maximum ABC = 214,000 * .88 = 188,320 mt
  AI portion of the Pacific cod maximum ABC = 214,000 * .12 = 25,680 mt

- The maximum ABC is multiplied by .718 to determine the BS and AI Pacific cod TACs under Alternative 2:

  BS 188,320 mt * .718 = 135,214 mt
  AI 25,680 mt *.718 = 18,438 mt

- The BS Pacific cod TAC of 135,214 mt is distributed equally among four seasons as follows (values in metric tons):

Season	A	B	C	D	Total
Season Dates	1/20 to 3/15	4/1 to 6/1	6/15 to 8/15	9/1 to 12/31	
Season Apportionment	25%	25%	25%	25%	
Bering Sea	33,804	33,803	33,804	33,803	135,214

- The seasonal apportionment of the BS Pacific cod TAC would be divided between areas east of 170˚ W longitude and west of 170˚ W longitude based on the seasonal distribution of the Pacific cod biomass as follows:

Season	A	B	C	D
Season Dates	1/20 to 3/15	4/1 to 6/1	6/15 to 8/15	9/1 to 12/31
East of 170˚ W	82%	51%	51%	63%
West of 170˚ W	18%	49%	49%	37%
Total	100%	100%	100%	100%

- The Aleutian Islands Pacific cod TAC of 18,438 is allocated among the three management areas based on the following biomass distribution:

  Eastern Aleutian Islands 37%
  Central Aleutian Islands 29%
  Western Aleutian Islands 34%

- The 2001 BSAI Pacific cod TAC would be allocated by area, season, and sector under Alternative 2 as follows (values in metric tons):

Season	A	B	C	D	Total
Season Dates	1/20 to 3/15	4/1 to 6/1	6/15 to 8/15	9/1 to 12/31	
BS East of 170˚ W					
Total TAC by Season	27,719	17,240	17,240	21,296	83,495
CDQ Reserve	2,079	1,293	1,293	1,597	6,262
Non-CDQ Fisheries	25,640	15,947	15,947	19,699	77,233
BS West of 170˚ W					
Total TAC by Season	6,085	16,563	16,564	12,507	51,719
CDQ Reserve	456	1,242	1,242	938	3,878
Non-CDQ Fisheries	5,629	15,321	15,322	11,569	47,841
Eastern Aleutian Islands					
Total TAC by Season	1,705	1,706	1,705	1,706	6,822
CDQ Reserve	128	128	128	128	512
Non-CDQ Fisheries	1,577	1,578	1,577	1,578	6,310
Central Aleutian Islands					
Total TAC by Season	1,337	1,337	1,337	1,336	5,347
CDQ Reserve	100	100	100	100	400
Non-CDQ Fisheries	1,237	1,237	1,237	1,236	4,947
Western Aleutian Islands					
Total TAC by Season	1,568	1,567	1,568	1,566	6,269
CDQ Reserve	118	117	118	117	470
Non-CDQ Fisheries	1,450	1,450	1,450	1,449	5,800
Total Bering Sea TAC					135,214
Total Aleutian Is. TAC					18,438
Total BSAI TAC					153,652

Daily catch limit: In addition, there would be a maximum daily catch limit of 600 mt of Pacific cod for all vessels fishing in the Bering Sea and a separate 600 mt daily catch limit for vessels fishing in the Aleutian Islands.

Foraging Area Catch Limit: Alternative 2 would require a catch limit for Pacific cod inside the foraging areas of Seguam, the Sea Lion Conservation Area (SCA), and Shelikof Strait established at 10% of the survey biomass for Pacific cod. NMFS has no information about the distribution of Pacific cod within the Seguam or Shelikof Strait foraging areas, so no foraging area catch limit could be estimated for those areas. However, a foraging area catch limit inside the SCA established as 10% of the exploitable biomass inside the SCA by season would be as follows (values in metric tons):

Season	A	B	C	D
Season Dates	1/20 to 3/15	4/1 to 6/1	6/15 to 8/15	9/1 to 12/31
Foraging Area Catch Limit	61	20	17	46

Bering Sea and Aleutian Islands Atka Mackerel

The procedure for specifying BSAI Atka mackerel TACs under Alternative 2 would be as follows:

- Alternative 2 requires that the TAC would be 33% of the maximum permissible ABC. The maximum permissible ABC for BSAI Atka mackerel was 127,900 mt in 2001. Therefore, the maximum Atka mackerel ABC would be 42,207 mt (127,900 mt * .33).

- This maximum permissible ABC is divided among the three Atka mackerel management areas in the same proportion as the 2001 Atka mackerel ABC (values in metric tons).

Area	2001 ABC	% by Area	Distribution of Max. ABC (127,900 mt)	Alt. 2 TAC (33% max ABC)
BS/EAI	7,800	11.26%	14,402	4,753
CAI	33,600	48.48%	62,005	20,462
WAI	27,900	40.26%	51,493	16,992
Total	69,300	100.00%	127,900	42,207

- The Atka mackerel TAC of 42,207 mt would be distributed among the areas, seasons, and sectors under Alternative 2, as follows:

Seasonal Apportionment (seasons apply to CDQ and non-CDQ fisheries)					
Season	**A**	**B**	**C**	**D**	**Total**
Season Dates	1/20 to 3/15	4/1 to 6/1	6/15 to 8/15	9/1 to 12/31	
Season Apportionment	25%	25%	25%	25%	100%
Bering Sea/Eastern Aleutian Islands (BS/541)					
CDQ Reserve	89	89	89	89	356
Jig Allocation	22	22	22	22	88
Non-CDQ, Other Gears	1,077	1,077	1,077	1,077	4,309
Total BS/EAI	1,189	1,189	1,189	1,189	4,753
Central Aleutian Islands (542)					
CDQ Reserve	384	384	384	383	1,535
Non-CDQ	4,732	4,732	4,732	4,712	18,927
Total CAI	5,116	5,116	5,116	5,114	20,462
Western Aleutian Islands (543)					
CDQ Reserve	319	318	319	318	1,274
Non-CDQ	3,930	3,930	3,930	3,929	15,719
Total WAI	4,248	4,248	4,248	4,249	16,993

Daily catch limit: In addition, there would be a maximum daily catch limit of 300 mt for vessels fishing in the Atka mackerel fishery. This would mean that 300 mt would be the maximum for all Atka mackerel fishing in the BS and Aleutian Islands (BS/541, 542, and 543 together).

Gulf of Alaska Pollock

Management measures for ABC and TAC levels for GOA pollock under Alternative 2 include: 1) setting a modified ABC at a level equal to 44.8% of the maximum ABC (in this example the 2001 ABC is the maximum permissible); 2) apportioning the annual pollock ABC among management areas based the most recent seasonal (an A/B or winter/spring and a C/D or summer/fall) distribution of pollock biomass; and 3) establishing four equal seasonal apportionments of pollock TAC among five management areas (including the Shelikof Strait) in the A and B seasons and among four management areas in the C and D seasons. The 2001 GOA pollock TACs under Alternative 2 would be apportioned as follows (values in metric tons):

Season	A	B	C	D	Total
Season Dates (trawl gear)	1/20 to 3/15	4/1 to 6/1	6/15 to 8/15	9/1 to 12/31	
Season Apportionment	25%	25%	25%	25%	
Area					
Shumagin (610)	3,154	3,154	4,565	4,565	15,438
Chirikof (620)	2,131	2,131	2,712	2,712	9,686
Kodiak (630)	287	287	3,575	3,575	7,724
Shelikof Strait	5,281	5,281	0	0	10,562
West Yakutat (640)	275	275	275	275	1,100
Total	11,128	11,128	11,127	11,127	44,510

Daily catch limit: In addition, there would be a maximum daily catch limit of 1,000 mt of pollock for all vessels fishing in the Gulf of Alaska.

Gulf of Alaska Pacific Cod

Management measures for ABC and TAC levels under Alternative 2 include: 1) set a modified ABC at a level equal to 55% of the maximum ABC (in this example the maximum permissible ABC for 2001 was calculated as 76,700 mt); 2) apportion the annual Pacific cod ABC among four management areas based the most recent estimate of distribution of pollock biomass (biomass estimates for the Shelikof Strait are not available, however the distribution of Pacific cod biomass in areas 620 and 630 is estimated at 30.2% and 26.8% of the total gulf biomass respectively); and 3) establish four equal seasonal apportionments of Pacific cod TAC among four management areas. The 2001 GOA Pacific cod TACs under Alternative 2 would be apportioned as follows (values in metric tons):

Season	A	B	C	D	Total
Season Dates	1/20 to 3/15	4/1 to 6/1	6/15 to 8/15	9/1 to 12/31	
Season Apportionment	25%	25%	25%	25%	
Area					
Shumagin (610)	2,848	2,847	2,848	2,847	11,390
Chirikof (620)	2,389	2,389	2,389	2,388	9,555
Kodiak (630)	2,120	2,120	2,120	2,019	8,479
West Yakutat (640)	554	554	554	553	2,215
Total	7,911	7,910	7,911	7,907	31,639

Note: Does not include allocation between inshore (90%) and offshore (10%) components.

Daily catch limit: In addition, there would be a maximum daily catch limit of 400 mt of Pacific cod for all vessels fishing in the Gulf of Alaska.

2.3.3 Alternative 3: Restricted and Closed Area Approach

This alternative is the RPA detailed in the November 30, 2000, Biological Opinion (NMFS, 2000a). Essential elements of this approach are to establish large areas of critical habitat where fishing for pollock, cod, and mackerel is prohibited, and to restrict catch levels in remaining critical habitat areas. The mapable features of this alternative are illustrated in Figure 2.3-3 (map packet). Details are as follows:

Applicable to all fisheries:

- No transit zones within 3 nm of 37 rookeries.

- No groundfish fishing within 3 nm of haulouts.

Applicable to all pollock, Pacific cod and Atka mackerel fisheries:

The NMFS 2000 Biological Opinion global control rule would be applied, whereby the ABC for pollock, Pacific cod, and Atka mackerel in the BSAI and GOA would be reduced when the spawning biomass is estimated to be less than 40% of the projected unfished biomass, such that the reduction would result in no directed fishing for a species when the spawning biomass is estimated to be less than 20% of the projected unfished biomass.

- Closure areas to directed fishing for pollock, Pacific cod, and Atka mackerel inside specified sites (designated in the NMFS 2000 Biological Opinion as Areas 2,4,6,8, 9,10,11,13) would be established.

- Fishing for pollock, Pacific cod and Atka mackerel with trawl gear would be prohibited from November 1 through January 20.

- Fishing for pollock, Pacific cod and Atka mackerel using any gear type would be prohibited from November 1 through January 20 inside critical habitat.

- Outside of critical habitat, NMFS would establish 2 evenly spaced seasons for pollock, Pacific cod, and Atka mackerel fisheries in the EBS, GOA, and AI. An amount of the annual TAC would be apportioned to each season based on the approach used in the 1998 Biological Opinion so that 40% of the annual TAC is available in the winter season (A/B seasons) and 60% would be available in the fall season (C/D seasons). Inside critical habitat, four seasons will be established for the open CH-RFRPA zones. This measure will evenly subdivide the combined winter allocation of 40% to the A and B seasons (20% each to the A and B season inside CH), and the combined fall allocation of 60% to the C and D seasons (30% each to the C and D season inside CH).

- Catch limits for pollock, Pacific cod, and Atka mackerel inside critical habitat would be established based on the proportion of biomass estimated to be in critical habitat open to fishing to the total biomass in the overall management area.

Applicable to pollock fisheries:

- A portion of the Aleutian Islands would be open to pollock fishing (Area 12).

Applicable to the Pacific cod fisheries:

- The Pacific cod TAC would be split from a combined BSAI TAC to separate TACs for the EBS and the AI based on the biomass distribution of the stock.

TACs under Alternative 3 would be established following the procedures described in Section 9 of the November 30, 2000 Biological Opinion and would be as follows (values in metric tons):

Bering Sea and Aleutian Islands Pollock

Season	A	B	C	D	Total
Season Dates	1/20 to 4/1	4/1 to 6/10	6/10 to 8/21	8/21 to 11/1	
Seasonal Apportionment	A + B (40% annual TAC)		C + D (60% annual TAC)		
Bering Sea Pollock					
CDQ	56,000		84,000		140,000
AFA	483,840		725,760		1,209,600
Total, Directed Fisheries	539,840		809,760		1,349,600
ICA					50,400
Total					1,400,000
Limit Inside Area 7 [1/]	7.3%	4.6%	0.9%	1.4%	
CDQ	10,220	6,440	1,260	1,960	19,880
AFA	88,301	55,642	10,886	16,934	171,763
Total Catch Limit	98,521	62,082	12,146	18,894	191,643
Aleutian Islands Pollock					
CDQ	952		1,428		2,380
AFA	7,768		11,652		19,420
Total, Directed Fisheries	8,720		13,080		21,800
ICA					2,000
Total					23,800
Limit Inside CH-RFRPA [1/]	0.9%	1.0%	1.8%	1.7%	
CDQ	21	24	43	0	128
AFA	175	194	350	330	1,049
Total catch limit	196	218	393	370	1,177

[1/] Catch limits are established as a maximum percent of the annual TAC for the area, as described in the NMFS 2000 Biological Opinion.

Bering Sea and Aleutian Islands Pacific Cod

Season	A	B	C	D	Total
Season Dates [1/]	1/20 to 4/1	4/1to 6/10	6/10 to 8/21	8/21 to 11/1	
Seasonal Apportionment	A + B (40% annual TAC)		C + D (60% annual TAC)		
Bering Sea Pacific Cod					
CDQ		4,963		7,445	12,408
Non-CDQ		61,213		91,819	153,032
Total		66,176		99,264	165,440
Limit Inside CH-RFRPA [2/]	6.9%	1.3%	2.5%	6.0%	
CDQ	856	161	310	744	2,072
Non-CDQ	10,559	1,989	3,826	9,182	25,556
Total Catch Limit	11,415	2,151	4,136	9,926	27,628
Aleutian Islands Pacific Cod					
CDQ		677		1,015	1,692
Non-CDQ		8,347		12,521	20,868
Total		9,024		13,536	22,560
Limit Inside CH-RFRPA [2/]	13.7%	7.4%	4.4%	9.7%	
CDQ	232	125	74	164	595
Non-CDQ	2,859	1,544	918	2,024	7,345
Total Catch Limit	3,091	1,669	993	2,188	7,940

[1/] Vessels using other than trawl gear may fish for Pacific cod outside of critical habitat areas starting on January 1.

[2/] Catch limits are established as a maximum percent of the annual TAC for the area, as described in the NMFS 2000 Biological Opinion.

Bering Sea and Aleutian Islands Atka Mackerel

Season	A	B	C	D	Total
Season Dates	1/20 to 4/1	4/1 to 6/10	6/10 to 8/21	8/21 to 11/1	
Seasonal Apportionment	A + B (40% annual TAC)		C + D (60% annual TAC)		
Bering Sea/Eastern Aleutian Islands Atka Mackerel					
CDQ	234		351		585
Non-CDQ	2,886		4,329		7,215
Total	3,120		4,680		7,800
Limit Inside CH-RFRPA [1/]	1.7%	1.7%	2.5%	2.5%	
CDQ	88	88	130	130	436
Non-CDQ	1,090	1,090	1,603	1,603	5,386
Total Catch Limit	1,178	1,178	1,733	1,733	5,822
Central Aleutian Islands Atka Mackerel					
CDQ	1,008		1,512		2,520
Non-CDQ	12,432		18,648		31,080
Total	13,440		20,160		33,600
No fishing allowed inside CH-RFRPA					
Western Aleutian Islands Atka Mackerel					
CDQ	837		1,256		2,093
Non-CDQ	10,323		15,485		25,808
Total	11,160		16,741		27,900
No fishing allowed inside CH-RFRPA					

[1/] CH-RFRPA = Critical Habitat-Revised Final Reasonable and Prudent Alternative from the NMFS 1998 Biological Opinion (NMFS, 1998b). Catch limits are established as a maximum percent of the annual Atka mackerel TAC for all areas of 69,300 mt, as described in the NMFS 2000 Biological Opinion.

Gulf of Alaska Pollock

Management measures for ABC and TAC levels for GOA pollock under Alternative 3 include: 1) adoption of the NMFS 2000 Biological Opinion global control rule (GCR) in establishing an ABC (in this example, based on the 2001 GOA pollock stock assessment, the global control rule would apply); 2) apportioning the annual pollock ABC among management areas based the most recent seasonal (and A/B or winter/spring and a C/D or summer/fall) distribution of pollock biomass; 3) two seasonal apportionments of pollock TAC among 4 management areas in the A/B season and in the C/D seasons; and 4) four seasonal catch limits of pollock TAC within critical habitat areas among four management areas in the A, B, C and D seasons. The 2001 GOA pollock TACs under Alternative 3 would be apportioned as follows (values in metric tons):

Season	**A/B**		**C/D**		**Total**
Season Dates (trawl gear)	1/20 to 6/11		6/11 to 11/1		
Season Apportionment	40		60		100
Area					
Shumagin (610)	9,282		20,158		29,440
Chirikof (620)	19,976		11,973		31,949
Kodiak (630)	2,686		15,785		18,471
West Yakutat (640)	809		1,213		2,022
Total	32,753		49,129		81,882
Critical Habitat Catch Limit					
Season	**A**	**B**	**C**	**D**	**Total**
Season Dates (trawl gear)	1/20 to 4/1	4/1 to 6/11	6/11 to 8/22	8/22 to 11/1	
Season Apportionment	20	20	30	30	
Area					
Shumagin (610)	3,930	3,930	1,720	1,720	11,300
Chirikof (620)	8,761	8,761	3,767	3,767	25,056
Kodiak (630)	82	82	1,801	1,801	3,766
West Yakutat (640)	164	164	246	246	820
Total	12,937	12,937	7,534	7,534	40,942

Gulf of Alaska Pacific Cod

Management measures for ABC and TAC levels for GOA Pacific cod under Alternative 3 include: 1) adoption of the NMFS 2000 Biological Opinion GCR in establishing an ABC (in this example, based on the 2001 GOA Pacific cod stock assessment, the GCR would not be applicable); 2) apportioning the annual Pacific cod ABC among management areas based the most recent estimate of distribution of Pacific cod biomass; 3) two seasonal apportionments of Pacific cod TAC among 4 management areas in the A/B season and in the C/D seasons; and 4) four seasonal catch limits of Pacific cod TAC within SSL CH among 4 management areas in the A, B, C and D seasons. The TAC values listed reflect a reduction of the total ABC by 25% in consideration of fully utilized State water fisheries, however the values listed for catch limits within critical habitat in the individual seasons have not been reduced to reflect the State water fisheries. The 2001 GOA Pacific cod TACs under Alternative 3 would be apportioned as follows (values in metric tons):

Season	A/B		C/D		Total
Season Dates (trawl gear)[1]	1/20 to 6/11		6/11 to 11/1		
Season Apportionment;	40		60		100
Area					
Western	7,320		10,980		18,300
Central	11,595		17,393		28,988
Eastern	1,424		2,136		3,560
Total	20,339		30,509		50,848
Critical Habitat Catch Limit					
Season	**A**	**B**	**C**	**D**	**Total**
Season Dates	1/20 to 4/1	4/1 to 6/11	6/11 to 8/22	8/22 to 11/1	
Area					
Western	1,153	68	68	68	1,357
Central	5,424	1,492	2,509	2,576	12,001
Eastern	271	136	136	203	746
Total	6,848	1,696	2,713	2,847	14,104

Note: Does not include allocation between inshore (90%) and offshore (10%) components.
1 Season dates outside critical habitat for fixed gear are from 1/1 to 6/11 for the A/B season and from 6/11 to 12/31 for the C/D season.

2.3.4 Alternative 4: Area and Fishery Specific Approach (Preferred Alternative)

This alternative was developed by the Council's RPA committee. This approach allows for different types of management measures in the three areas (AI, BS, and GOA). Essential measures include fishery specific closed areas around rookeries and haulouts, together with seasons and catch apportionments. The mapable features of this alternative and optional elements are illustrated in Figure 2.3-4 through 2.3-7 (map packet). Details are as follows:

Applicable to all fisheries:

- No transit zones and no groundfish fishing within 3 nm of 37 rookeries.
- No groundfish fishing within 0-20 nm of the 5 northern haulouts in the Bering Sea.

Applicable to all pollock, cod, and mackerel fisheries:

- A modified global control rule would be applied, whereby the ABC for pollock, Pacific cod, and Atka mackerel in the BSAI and GOA will be reduced when the spawning biomass is estimated to be less than 40% of the projected unfished biomass. The reduction would continue at the present rate established under the Amendment 56 tiers, but when the spawning biomass is estimated to be less than 20% of the projected unfished biomass, directed fishing for a species would be prohibited.
- The Seguam Pass foraging area, Area 9 (Bogoslof) and Area 4 (Chignik), would be closed to all gear types fishing for pollock, Pacific cod, and Atka mackerel.

Applicable to AI pollock fisheries:

- No fishing for pollock in critical habitat in the AI.
- In the AI, there would be one season with January 20 opening.

Applicable to AI cod fisheries:

- Establish seasons and TAC apportionments by gear type:
  trawl: January 20 to June 10 (80%), June 10 to November 1 (20%)
  longline, jig: January 1 to June 10 (60%), June 10 to December 31 (40%)
  pot: January 1 to June 10 (60%), September 1 to December 31 (40%)
  pot CDQ January 1 to December 31
  [*Note: the harvest of cod by the <60' pot vessels should account towards the 1.4% quota when the 18.3% season for vessels >60' is closed.*]
- Establish area restrictions based on gear type:

  Longline and Pot: No fishing in critical habitat east of 173° West to western boundary of Area 9, 0-10 nm closures at Buldir, 0-20 nm closure at Agligadak.

  Trawl: East of 178° West longitude: 0-10 nm closures around rookeries, except 0-20 nm at Agligadak; 0-3 nm closures around haulouts.

  Trawl West of 178° West longitude: 0-10 nm closures around haulouts and rookeries until the Atka mackerel fishery inside CH A or B season, respectively, is completed, at which time trawling for cod can occur outside 3 nm of haulouts and 10 nm of rookeries.

Applicable to AI Atka mackerel fisheries:

- Establish two seasons and TAC apportionments: January 20 (50%), September 1 (50%).
- TAC would be further apportioned inside and outside of critical habitat, with 70% inside and 30% outside.
- A system of platoon management would be implemented for Areas 542 and 543. Vessels wishing to participate would register with NMFS to fish scheduled A or B seasons and would be randomly assigned to one of two teams. The teams would start in either 542 or 543, then switch when the other team is done with their starting areas CH allowance. Once registered for an opening, vessels would be required to participate, otherwise would be prohibited from fishing in any other fishery during the 14 day period following the mackerel season opening date.
- No directed fishing for Atka mackerel in critical habitat east of 178° West longitude.
- 0-10 nm closures around rookeries west of 178° West longitude, and 0-15 nm at Buldir.
- 0-3 nm closures around haulouts.

Applicable to Bering Sea pollock fisheries:

- Establish seasons and TAC apportionments: January 20 to June 10 (40%), June 10 to November 1 (60%).

- No fishing for pollock during the A season within an area north of Alaska peninsula and Aleutian chain approximately 10 nm from shore, based on a series of straight lines that are tangent to haulouts in the area.

- 0-10 nm closures around all rookeries and haulouts (except the Pribilof haulouts that would be closed 0-3nm).

- The 'Catcher Vessel Operational Area' would be closed to trawl catcher/processors during the B season (June 10 to November 1).

- A limit on the amount of pollock taken within the SCA would be established at no more than 30% of the annual TAC that can be harvested in the SCA prior to April 1 each year. The remaining 10% of the annual TAC may be harvested outside of the SCA before April 1 or inside SCA after April 1. If the 30% was not taken in the SCA prior to April 1, the remainder can be rolled over to be taken inside after April 1.

Applicable to Bering Sea cod fisheries:

- Establish seasons and TAC apportionments:
  trawl: January 20 to June 10 (80%), June 10 to November 1 (20%)
  longline, jig: January 1 to June 10 (60%), June 10 to December 31 (40%)
  pot: January 1 to June 10 (60%), September 1 to December 31 (40%)
  pot CDQ: January 1 to December 31
  [Note: the harvest of cod by the <60' pot vessels should account towards the 1.4% quota when the 18.3% season for pot vessels > 60' is closed.]

- 0-3 nm closures around all rookeries and haulouts (except with jig gear around haulouts).

- 0-10 nm closures around all rookeries and haulouts for trawl gear (except the Pribilof haulouts that would be closed 0-3 nm).

- 0-7 nm closure around Amak rookeries for longline and pot gear.

Applicable to Gulf of Alaska pollock fisheries:

- Establish seasons and TAC apportionments:
  A season = January 20 to February 25 (25%)
  B season = March 10 to May 31 (25%)
  C season = September 1 to September 15 (25%)
  D season = October 1 to November 1 (25%)
  [Note: Rollovers of TAC apportionment are allowed, provided that no rollover is more than 30% of annual TAC for an individual management area.]

- No directed pollock fishing in the areas listed:

  Area 1: 0-20 nm from all rookeries and haulouts, except 0-10 nm around Middleton Island

  Area 2: 0-10 nm from all haulouts. 0-20 nm closures at Pye Island and Sugarloaf rookeries. 0-15 nm closures at Marmot Island in the first half of the year, and 0-20 nm in the second half of the year.

  Area 3: 0-10 nm from all rookeries and haulouts except 0-3 nm at Cape Barnabus and Cape Ikolik. 0-10 nm closures at Gull Point and Ugak Island during the first half of the year and 0-3 nm during the second half of the year.

  Area 4: 0-20 nm from all haulouts and rookeries.

  Area 5: 0-20 nm from all rookeries and haulouts, except 0-3 nm at Mitrofania/Spitz, Whaleback, Sea Lion Rocks, Mountain Point, and Castle Rock..

  Area 6: 0-10 nm from all rookeries and haulouts, except 0-3 nm at Caton and the Pinnacles.

  Areas 10 and 11: 0-20 nm from all rookeries and haulouts

<u>Applicable to Gulf of Alaska cod fisheries</u>:

- Establish seasons and TAC apportionments:
  A-season = 60% of TAC: January 1 fixed gear, January 20 trawl
  B-season = 40% of TAC: September 1 all gear types

- No <u>trawling</u> for cod in the areas listed:

  Area 1: 0-20 nm from all rookeries and haulouts, except 0-10 nm around Middleton Island.

  Area 2: 0-10 nm from all haulouts. 0-20 nm closures at Pye Island and Sugarloaf rookeries. 0-15 nm closures at Marmot Island in the first half of the year, and 0-20 nm in the second half of the year.

  Area 3: 0-10 nm from all rookeries and haulouts except 0-3 nm at Cape Barnabus and Cape Ikolik. 0-10 nm closures at Gull Point and Ugak Island during the first half of the year and 0-3 nm during the second half of the year.

  Area 4: 0-20 nm from all haulouts and rookeries.

  Area 5: 0-20 nm from all rookeries and haulouts, except 0-3 nm at Mitrofania/Spitz, Whaleback, Sea Lion Rocks, Mountain Point, and Castle Rock.

  Area 6: 0-10 nm from all rookeries and haulouts, except 0-3 nm at Caton and the Pinnacles.

  Areas 10 and 11: 0-20 nm from all rookeries and haulouts.

- No directed fishing for cod with fixed gear (except with jig gear) in the areas listed.

  Area 1: 0-3 nm from all rookeries.

  Area 2: 0-10 nm closures at Pye Island, Sugarloaf, and Marmot.

  Area 3: 0-3 nm around Cape Barnabus and Cape Ikolik haulouts.

  Area 4: 0-20 nm from all haulouts and rookeries.

  Area 5: 0-3 nm from all rookeries and Mitrofania/Spitz, Whaleback, Sea Lion Rocks, Mountain Point, and Castle Rock haulouts.

  Area 6: 0-3 nm at Caton and the Pinnacles.

  Areas 10 and 11: 0-20 nm from all rookeries and haulouts for pot gear; 0-10 nm from all rookeries and haulouts for longline gear.

- There are three options for closure areas applicable to the GOA Pacific cod fisheries under this alternative: see Figure 2.3-7 (map packet).

  Option 1: Chignik small boat exemption. This option would establish a fishing zone in the Chignik area (area 4) for fixed gear out to ten (10) miles from Castle Cape to Foggy Cape for vessels under 60 ft.

  Option 2: Unalaska small boat exemption. This option would establish a fishing zone in the Dutch Harbor area (area 9) for fixed gear out to ten (10) miles from Cape Cheerful to Umnak Pass for vessels under 60 ft.

  Option 3: Gear specific zones for GOA Pacific cod fisheries. This option would establish zones (0-3 nm, 3-12, nm, 12-20 nm, and > 20 nm), as measured from land, from which vessels of certain sizes, and using certain listed gear types could participate.

0-3 nm	3-12 nm	12-20 nm	Outside 20 nm
pot vessels with 60 pot limit, and jig vessels with a 5 machine limit	pot vessels with 60 pot limit, jig vessels with a 5 machine limit, and longline vessels < 60'	all pot vessels, all jig vessels, and all longline vessels	all vessels and gears

The following provide examples of how the 2001 TACs would have been determined under Alternative 4 (values in metric tons).

Bering Sea Pollock

Season	A	B	Total
Season Dates	1/20 to 6/10	6/10 to 11/1	
Season Apportionment	40%	60%	
CDQ	56,000	84,000	140,000
AFA	483,840	725,760	1,209,600
ICA			50,400
Total			1,400,000
Catch Limit Inside the SCA			
Season Dates	**Before 4/1**		
Catch Limit	30% of annual TAC		
CDQ	42,000		
AFA	362,880		
Total	404,880		

Aleutian Islands Pollock

One season opening on January 20, with no directed fishing for pollock inside critical habitat. The follows TAC would be available.

Total pollock TAC:	23,800 mt
CDQ Reserve	2,380 mt
AFA	19,420 mt
ICA	2,000 mt

Bering Sea and Aleutian Islands Pacific Cod

CDQ Reserve	A	B	Total
Season Dates	1/1 to 6/10	6/10 to 12/31	
% Allocation	60%	40%	
Seasonal Allocation	8,460	5,640	14,100
Trawl Gear			
Season Dates	1/20-6/10	6/10-11/1	
% Allocation	80%	20%	
Seasonal Allocation	65,386	16,347	81,733
Fixed Gear			
Season Dates	1/1-6/10	6/10-12/31	
% Allocation	60%	40%	
Seasonal Allocation	53,213	35,475	92,167
Total BSAI Pacific Cod TAC			188,000

Bering Sea and Aleutian Islands Atka Mackerel

Season	A	B	Total
Season Dates	1/20 to 9/1	9/1-11/1	
Season Allocation (%)	50%	50%	
Bering Sea/Eastern Aleutian Islands			
CDQ Reserve	293	293	
Non-CDQ, jig	72	72	
Non-CDQ, other gears	3,535	3,535	
Total	3,900	3,900	7,800
Central Aleutian Islands			
Total TAC for Area			
CDQ Reserve	1,260	1,260	
Non-CDQ	15,540	15,540	
Total	16,800	16,800	33,600
Limit Inside Critical Habitat	70%	70%	
CDQ Reserve	882	882	
Non-CDQ	10,878	10,878	
Total	11,760	11,760	23,520
Western Aleutian Islands			
Total TAC for Area			
CDQ Reserve	1,046	1,046	
Non-CDQ	12,904	12,904	
Total	13,950	13,950	27,900
Limit Inside Critical Habitat	70%	70%	
CDQ Reserve	732	732	
Non-CDQ	9,033	9,033	
Total	9,765	9,765	19,530

Gulf of Alaska Pollock

Management measures for ABC and TAC levels under Alternative 4 include: 1) modifying the NMFS 2000 Biological Opinion GCR to be used in establishing an ABC (in this example using the 2001 GOA pollock stock assessment would not result in an adjustment of GOA pollock ABC); 2) apportioning the annual pollock ABC among management areas based the most recent seasonal (and A/B or winter/spring and a C/D or summer/fall) distribution of pollock biomass; and 3) establishing four equal seasonal apportionments of pollock TAC among four management areas in the A, B, C and D seasons. The 2001 GOA pollock TACs under Alternative 4 would be apportioned as follows (values in metric tons):

Season	A	B	C	D	Total
Season Dates (trawl gear)	1/20 to 2/25	3/10 to 6/1	8/20 to 9/15	10/1 to 11/1	
Season Apportionment	25	25	25	25	
Area					
Shumagin (610)	7,039	7,039	10,191	10,191	34,460
Chirikof (620)	15,148	15,148	6,054	6,054	42,404
Kodiak (630)	2,037	2,037	7,980	7,980	20,034
West Yakutat (640)	613	613	613	613	2,452
Total	24,837	24,837	24,838	24,838	99,350

Gulf of Alaska Pacific Cod

Management measures for ABC and TAC levels for GOA Pacific cod under Alternative 4 include: 1) modifying the NMFS 2000 Biological Opinion GCR to be used in establishing an ABC (in this example using the 2001 GOA Pacific cod stock assessment would not result in an adjustment of GOA Pacific cod ABC); 2) apportioning the annual Pacific cod ABC among management areas based the most recent estimates of distribution of Pacific cod; and 3) establishing two seasonal apportionments of Pacific cod TAC among three management areas. The 2001 GOA Pacific cod TACs under Alternative 4 would be apportioned as follows (values in metric tons):

Season	A	B	Total
Season Dates	1/1 to 9/1 fixed gear 1/20 to 9/1 trawl gear	9/1 to 12/31 fixed gear 9/1 to 11/1 trawl gear	
Seasonal Apportionment	60%	40%	
Area			
Western GOA	10,980	7,320	18,300
Central GOA	17,393	11,595	28,988
Eastern GOA	2,136	1,424	3,560
Total	30,509	20,339	50,848

Note: Does not include allocation between inshore (90%) and offshore (10%) components.

2.3.5 Alternative 5: Critical Habitat Catch Limit Approach

This alternative is derived from the suite of RPA measures that were in place for the 2000 pollock and Atka mackerel fisheries, and measures considered for the Pacific cod fishery that include seasonal apportionments and harvest limits within critical habitat. Essentially, this alternative limits the amount of catch within critical habitat to be in proportion to estimated fish biomass. The mapable features of this alternative are illustrated in Figure 2.3-8 (map packet). Details are as follows:

Applicable to all fisheries:

- No transit zones within 3 nm of 37 rookeries.
- Closure within 10 or 20 nm of 37 rookeries to all trawling year-round.

Applicable to pollock fisheries:

- Closure to pollock fishing within 10 or 20 nm of 75 haulouts, seasonally or year-round based on use by sea lions.

- In the Bering Sea pollock fishery: four seasons with harvest limits within sea lion critical habitat foraging areas; and two seasons (40:60% allocation) outside critical habitat.

- In the Gulf of Alaska pollock fishery: fishery distributed over 4 seasons (30%, 15%, 30%, 25%).

- The Aleutian Islands area would be closed to directed fishing for pollock.

Applicable to the Atka mackerel fisheries:

- Two seasons with TAC apportionments would be established: January 20 to April 15 (50%); September 1 to November 1 (50%).

- Harvest limits would be established in critical habitat: (40% inside critical habitat, and 60% outside).

- VMS coverage would be required on all vessels fishing for Atka mackerel.

Applicable to the Pacific cod fisheries:

- In the BSAI cod fishery: separate TACs would be established for the Bering Sea and Aleutian Islands, two seasons (A season Jan 20-April 30 at 40% of TAC; B season May 1-November 1 at 60% of TAC) with catch limits within critical habitat based on best estimates of biomass. Using these estimates, the Bering Sea catch limits within critical habitat are 20% in the A season and 3.6% in the B season. In the Aleutian Islands, the catch limits within critical habitat are 20% in the A season and 48.3% in the B season.

- In the GOA cod fishery: two seasons (A season Jan 20-April 30 at 40% of TAC; B season May 1-November 1 at 60% of TAC) would be established with catch limits within critical habitat based on best estimates of biomass. Based on these estimates, the catch limits within critical habitat are 20% in the A season and 31.8% in the B season.

The following summarize what the 2001 TACs would have been under Alternative 5.

Bering Sea Pollock

Season	A + B		C + D	
Season Dates	1/20 to 6/10		6/10 to 11/1	
Season Apportionment	40%		60%	
CDQ	56,000		84,000	
AFA	483,840		725,760	
Catch Limit Inside SCA				
Season	**A**	**B**	**C**	**D**
Season dates	1/20 to 4/1	4/1 to 6/10	6/10 to 8/20	8/20 to 11/1
% limit in SCA [1/]				
CDQ	62.00%	20.50%	14.00%	23.00%
AFA Inshore 50%)	42.00%	14.00%	13.50%	22.50%
AFA c/ps (40%)	24.75%	8.25%	0.00%	0.00%
AFA motherships (10%)	37.50%	12.5%	0.00%	0.00%
Amount of limit in SCA				
CDQ	34,720	11,480	11,760	19,320
AFA inshore 50%)	101,606	33,869	48,989	81,648
AFA c/ps (40%)	47,900	15,967	0	0
AFA motherships (10%)	18,144	6,048	0	0

[1/] Limit inside critical habitat calculated as a percent of each sector's seasonal allocation following the procedure described in the 2000 annual groundfish specifications (65 FR 8282; February 18, 2000).

Aleutian Islands Pollock

No directed fishing for pollock in the Aleutian Islands, so the TAC would be set at 2,000 mt to provide for incidental catch of pollock in other groundfish fisheries.

Bering Sea and Aleutian Islands Pacific Cod

Bering Sea Pacific Cod (88% of BSAI TAC)			
Season	**A**	**B**	**Total**
Season Dates	1/20 to 5/1	5/1 to 11/1	
Season Apportionment	40%	60%	
CDQ	4,963	7,445	
Non-CDQ, by gear	61,213	91,819	
Total TAC	66,176	99,264	165,440
Inside CH-RFRPA			
Season	**A**	**B**	**Total**
Season Apportionment	20%	3.6%	
CDQ	2,482	447	
Non-CDQ, by gear	30,606	5,509	
Total inside CH	33,088	5,956	39,044
Aleutian Islands Pacific Cod (12% of BSAI TAC)			
Season	**A**	**B**	**Total**
Season Dates	1/20 to 5/1	5/1 to 11/1	
Season Apportionment	40%	60%	
CDQ	677	1,015	
Non-CDQ, by gear	8,347	12,521	
Total TAC	9,024	13,536	22,560
Inside CH-RFRPA			
Season	**A**	**B**	**Total**
Season Dates	1/20-5/1	5/1 to 11/1	
Season Apportionment	20%	48.3%	
CDQ	338	817	
Non-CDQ, by gear	4,174	10,079	
Total inside CH	4,512	10,896	15,408
Total BS+AI Pacific Cod TAC			188,000

Bering Sea and Aleutian Islands Atka Mackerel

Bering Sea/Eastern Aleutian Islands

Season	A	B	Total
Season Dates	1/20 to 4/15	9/1 to 11/1	
Season Apportionment	50%	50%	
CDQ (7.5%) - no seasons			585
Jig Gear (2%) - no seasons			144
Other Gear (trawl)	3,536	3,535	7,071
Total			7,800

Central Aleutian Islands

Season	A	B	Total
Season Dates	1/20 to 4/15	9/1 to 11/1	
Season Apportionment	50%	50%	
CDQ (7.5%) - no seasons			2,520
Non-CDQ	15,540	15,540	31,080
Total			33,600
Critical Habitat Area Catch Limit	40%	40%	
CDQ - no seasons			1,008
Non-CDQ	6,216	6,216	12,432

Western Aleutian Islands

Season	A	B	Total
Season Dates	1/20 to 4/15	9/1 to 11/1	
Season Apportionment	50%	50%	
CDQ (7.5%) - no seasons			2,093
Non-CDQ	12,904	12,903	25,807
Total			27,900
Critical Habitat Area Catch Limit	40%	40%	
CDQ - no seasons			837
Non-CDQ	5,162	5,161	10,323

Gulf of Alaska Pollock

Management measures for ABC and TAC levels for GOA pollock under Alternative 5 include four seasonal apportionments of pollock TAC, based on the average distribution of biomass, among four management areas in the A, B, C, and D seasons. The 2001 GOA pollock TACs under Alternative 5 would be apportioned as follows (values in metric tons):

Season	A	B	C	D	Total
Season Dates (trawl gear)	1/20 to 3/15	3/15 to 6/1	8/20 to 9/15	10/1 to 11/1	
Season Apportionment	30	15	30	25	
Area					
Shumagin (610)	10,342	5,171	10,342	8,619	34,474
Chirikof (620)	12,727	6,364	12,727	10,606	42,422
Kodiak (630)	5,991	2,995	5,991	4,992	19,969
West Yakutat (640)	745	373	745	621	2,484
Total	29,805	14,903	29,805	24,838	99,350

Gulf of Alaska Pacific Cod

Management measures for GOA Pacific cod ABC and TAC levels in this alternative include: 1) apportioning the annual Pacific cod ABC among three management areas based the most recent estimates of distribution of Pacific cod; 2) establishing two seasonal apportionments of Pacific cod TAC among three management areas; and 3) establishing catch limits inside critical habitat. The 2001 GOA Pacific cod TACs under Alternative 5 would be apportioned as follows (values in metric tons):

Season	A	B	Total
Season Dates	1/1 to 5/1 fixed gear 1/20 to 5/1 trawl gear	5/1 to 11/1 fixed gear 5/1 to 11/1 trawl gear	
Season Apportionment	40%	60%	
Area			
Western	7,320	10,980	18,300
Central	11,595	17,393	28,988
Eastern	2,136	1,424	3,560
Total	21,051	29,797	50,848
Critical Habitat Catch Limits			
Season Apportionment	20%	31.80%	
Area			
Western	3,660	5,819	9,479
Central	5,798	9,218	15,016
Eastern	712	1,132	1,844
Total	10,170	16,169	26,339

Note: Does not include allocation between inshore (90%) and offshore (10%) components.

Table 2.3-1 Comparison of management measures under the alternatives.

Management Measures	Alternative 1 No Action	Alternative 2 Low and Slow Approach	Alternative 3 Restricted and Closed Areas	Alternative 4 Area and Fishery Specific Approach	Alternative 5 CH Catch Limit Approach
Control Rule	Amendment 56 Tiers	TAC set as a % of maximum ABC	NMFS 2000 Biological Opinion Global Control Rule	RPA Comm. Global Control Rule	Amendment 56 Tiers
No Transit Zones	3 nm no-transit zones around principal rookeries	3 nm no-transit zones around principal rookeries	3 nm no-transit zones around principal rookeries	3 nm no-transit zones around principal rookeries	3 nm no-transit zones around principal rookeries
Area Closures	No trawling 10/20 nm from 37 rookeries	Prohibit all trawling in CH/RFRPA; AI closed to pollock fishing	All CH/RFRPA sites designated as restricted or closed to fishing for pollock, cod, and mackerel	Specified closures by fishery, area, and gear type; areas 4, 9, and Seguam closed to fishing for pollock, cod, and mackerel	No pollock fishing in AI area; no trawling 10/20 nm from 37 rookeries
Season Closures	No trawling 1/1 to 1/20	No trawling 1/1to 1/20; no trawling for pollock 11/1 to1/20	No trawling 1/1 to 1/20; no trawling for pollock, cod, or mackerel 11/1 to 1/20; no fishing for pollock, cod, or mackerel inside CH 11/1 to 1/20	No trawling 1/1to 1/20; closure period between GOA pollock seasons; no trawling for pollock or cod 11/1 to 12/31	No trawling 1/1 to 1/20; no trawling for pollock 11/1 to1/20
Seasons and Apportionments pollock	BSAI - 1/20 (45%), 9/1 (55%); GOA - 1/20 to 4/1 (25%), 6/1 to 7/1 (35%), 9/1 to 12/31 (40%)	Four seasons evenly distributed over year with 25% of TAC each season	BSAI - 1/20 (40%), 6/11 (60%); GOA - 1/20 (40%), 6/11 (60%)	AI - 1/20 (100%); BS 1/20 (40%), 6/11 (60%); GOA - 1/20 to 2/25 (25%); 3/10 to 5/31 (25%), 9/1 to 9/15 (25%), 10/1 to 11/1 (25%)	BSAI - 1/20, 4/1 (40%), 6/10, 8/20 to 11/1 (60%); GOA - 1/20 to 3/1 (30%), 3/15 to 6/1 (15%); 8/20 to 9/15 (30%), 10/1 to 11/1 (25%)

Table 2.3-1 Comparison of management measures under the alternatives (cont.).

Management Measures	Alternative 1 No Action	Alternative 2 Low and Slow Approach	Alternative 3 Restricted and Closed Areas	Alternative 4 Area and Fishery Specific Approach	Alternative 5 CH Catch Limit Approach
Seasons and Apportionments cod	BSAI trawl - 1/20 BSAI fixed -1/1, 5/1, 9/1 GOA trawl -1/20 GOA fixed - 1/1	Four seasons evenly distributed over year with 25% of TAC each season	BSAI - 1/20 (40%), 6/11 (60%); GOA - 1/20 (40%), 6/11 (60%)	BSAI trawl - 1/20 (80%), 6/11 (20%) BSAI longline- 1/1 (60%), 6/11 (40%) BSAI pot - 1/1 (60%), 9/1 (40%) GOA trawl - 1/20 (60%), 9/1 (40%) GOA fixed - 1/1 (60%), 9/1 (40%)	BS trawl + fixed - 1/20 to 4/30 (40%), 5/1 to 11/1 (60%) AI trawl + fixed - 1/20 to 4/30 (40%), 5/1 to 11/1 (60%) GOA trawl + fixed - 1/20 to 4/30 (40%), 5/1 to 11/1 (60%)
Seasons and Apportionments mackerel	AI - 1/20 to 4/15 (50%), 9/1 to 10/31 (50%)	Four season evenly distributed over year with 25% of TAC each season	BSAI - 1/20 (40%), 6/11 (60%); GOA - 1/20 (40%), 6/11 (60%)	AI - 1/20 to 4/15 (50%), 9/1to 10/31 (50%)	AI - 1/20 to 4/15 (50%), 9/1 to 10/31 (50%)
Catch Limits Inside CH	Akta mackerel: incremental change to limit of 40% inside CH in 2002	Foraging area catch limits for fixed gear fishing for Pacific cod	Pollock, cod, and mackerel: 4 seasons (1/20, 4/1, 5/11 8/22) inside CH/RFRPA with catch limits based on season and area specific biomass estimates	SCA pollock 75% of A season harvest prior to April 1 Mackerel 70% inside 30% outside of each season apportionment GOA cod: option for AMCC zonal approach for GOA Pacific cod.	Mackerel: incremental change to 40% inside CH and 60% outside in 2002 BSAI Pollock: maximum TAC % allowed inside CH/RFRPA sites = 20% in A+B season combined (15% for A + B singly), 4.5% in C season and 7.5% in D season BS cod: maximum TAC % allowed inside CH = 20% (A), 3.6% (B)

Management Measures	Alternative 1 No Action	Alternative 2 Low and Slow Approach	Alternative 3 Restricted and Closed Areas	Alternative 4 Area and Fishery Specific Approach	Alternative 5 CH Catch Limit Approach
					AI cod: maximum TAC % allowed inside CH = 20% (A), 48.3% (B) GOA cod: maximum TAC % allowed inside CH = 20% (A), 31.8% (B season)
Other Catch Limits		Daily catch limits: BS pollock 5000 mt GOA pollock 1000 mt BSAI cod 600 mt GOA cod 400 mt BSAI mackerel 300 mt			
Experimental Design	Small scale: Kodiak and Seguam localized depletion testing	Small scale with well defined and manageable objectives	Large scale: 4 sets of restricted/closed areas for comparison	Small scale with well defined and manageable objectives	Small scale: Kodiak and Seguam localized depletion testing
Observer Coverage	No change to current observer coverage requirements	No change to current observer coverage requirements	No change to current observer coverage requirements	No change to current observer coverage requirements	No change to current observer coverage requirements
VMS	Required BSAI Atka mackerel fishery				Required BSAI Atka mackerel fishery
Registration Requirements	None	Seasonal exclusive area registration	None		None

2.4 Alternatives Considered and Eliminated from Detailed Study

During the development of the alternatives for this plan amendment analysis, several proposals were briefly considered, but eliminated from further study. A summary of these alternatives, and brief rationale as to why they were not included in the analysis, is provided below:

Considered Alternative A: This alternative was a combination of Alternative 5 (the critical habitat catch limit approach) and the court injunction that prohibited all trawling within critical habitat. This alternative was proposed by the Council at its meeting in February 2001, but was not recommended for analysis when the Council developed its final set of alternatives in June 2001. The Council's rationale was that the major component of this alternative, the trawling prohibition in critical habitat, was already included in Alternative 2 (the low and slow approach), and the remainder of the alternative would be analyzed as Alternative 5. Hence, addition of this alternative would not have widened the range of alternatives.

Considered Alternative B: This alternative was developed as a strawman proposal for the RPA Committee. Elements of this approach included: 1) a prohibition on all groundfish fishing within 3 nm of all rookeries and haulouts; 2) a prohibition on fishing for pollock, cod, and mackerel within 10 nm of all rookeries and haulouts; 3) prohibition on all groundfish fishing within Seguam and Bogoslof; and 4) other features to spread out fishing effort over time. This alternative was not included in the final set of alternatives because most of the elements were included in Alternative 4; elements that were not included were considered but rejected as unworkable, unneeded (e.g., a prohibition on octopus retention), or failed to take into account needs of fishing communities. Therefore, inclusion of this alternative would not have widened the range of alternatives.

Considered Alternative C: This alternative, previously termed the 'no fishing policy' or setting total allowable catch at zero, would end all commercial groundfish fishing in the EEZ off Alaska. This alternative has been considered previously (i.e., NPFMC 1981, NMFS 1998a, NMFS 2001a), but not adopted because it would be inconsistent with the objectives for the FMPs and the Magnuson-Stevens Act. While this alternative may have positive benefits to Steller sea lions by eliminating groundfish fisheries, a potential source of competition for fish, this alternative would have major adverse biological, social, and economic consequences (NMFS 2001a). A goal of NMFS and the Council is to provide sound conservation of living marine resources, while also providing socially and economically sustainable fisheries. Because this alternative would run counter to this goal, it was not considered to be a reasonable alternative, and dropped from further consideration.

2.5 Description of the Current Fisheries

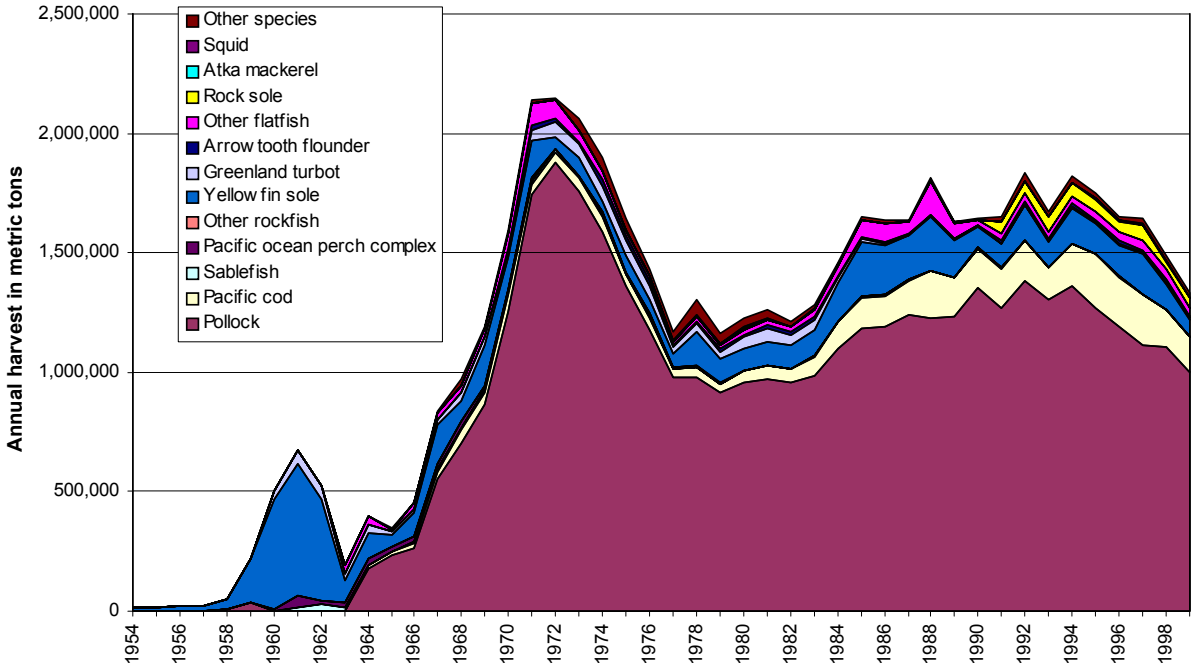
An overview of the federal management of the GOA and BSAI groundfish fisheries is presented in section 2 of the 2000 Biological Opinion (NMFS 2000a) and in section 2.7 of the Draft Programmatic SEIS prepared on the Alaska groundfish fishery management plans (NMFS 2001a). A discussion of the historical development of the Alaska groundfish fisheries that focuses on the BSAI pollock fishery is presented in section 3 of the Draft EIS prepared on the management provisions implementing the American Fisheries Act (AFA) (NMFS 2001c). This information is further summarized here along with an overview of management tools used to monitor these fisheries and a historical perspective on safety issues associated with the Alaska groundfish fisheries.

A general historical perspective of the catches of groundfish and squid taken in the Bering Sea, Aleutian Islands, and Gulf of Alaska are displayed in Figures 2.5-1 through 2.5-3, respectively. These figures reveal the growth and magnitude of the foreign groundfish harvest off Alaska during the late-1950s through the early-1970s. Of particular note is the development of the Bering Sea pollock fishery in the mid-1960s, which, by 1970 became (and continues to be) the largest single species fishery off Alaska, and indeed, the entire U.S.

Prior to 1980, Alaska groundfish was harvested primarily by foreign vessels. From 1976 until the late 1980s, a variety of federal laws and programs were developed to promote the "Americanization" of fisheries inside the U.S. EEZ, especially the rich groundfish resources of the Bering Sea. A start towards this was made in the early 1980s with the advent of what was known as the "Fish-and-Chips" policy. Fish-and-Chips tied foreign fishing privileges in the EEZ to commitments by the foreign entities to purchase the products of the U.S. seafood industry. The Magnuson-Stevens Act was designed to promote the development of a U.S. offshore fleet through an allocation system that favored domestic vessels over foreign vessels and joint venture operations. This led to the rapid development of joint ventures between foreign operators and U.S. harvesters, in which U.S. vessels would offload and sell their catches at sea to foreign factory ships that held permits to operate in the EEZ (Figure 2.5-4).

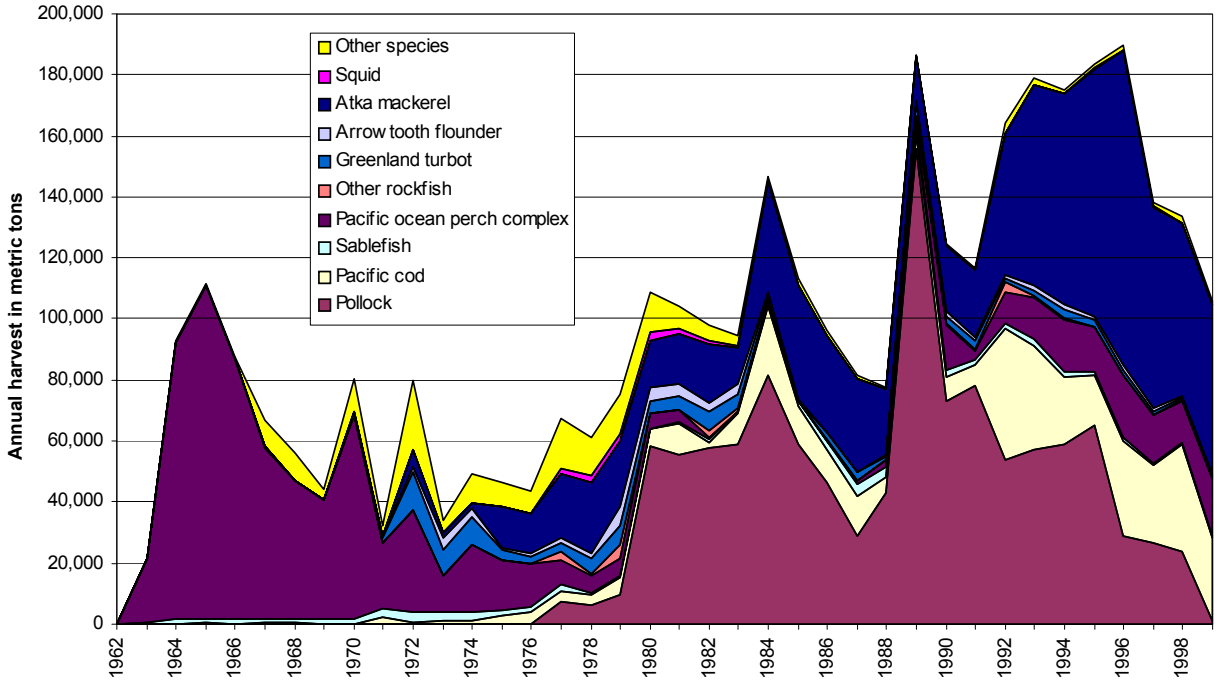
As a result of these policies, the groundfish resource off Alaska was harvested and processed entirely by U.S.-flagged vessels and processors by 1991, although the explosive growth of the domestic fishery was financed, in large part, by a flood of foreign capital into new vessels and processors. The last years of foreign directed fishing in the GOA and BSAI were 1986 and 1987, respectively. Foreign joint ventures peaked in 1987, and their last years of operation in the Gulf of Alaska and the Bering Sea were 1988 and 1991, respectively.

Figure 2.5-1 Groundfish harvests in the Bering Sea subarea by species, 1952-1999



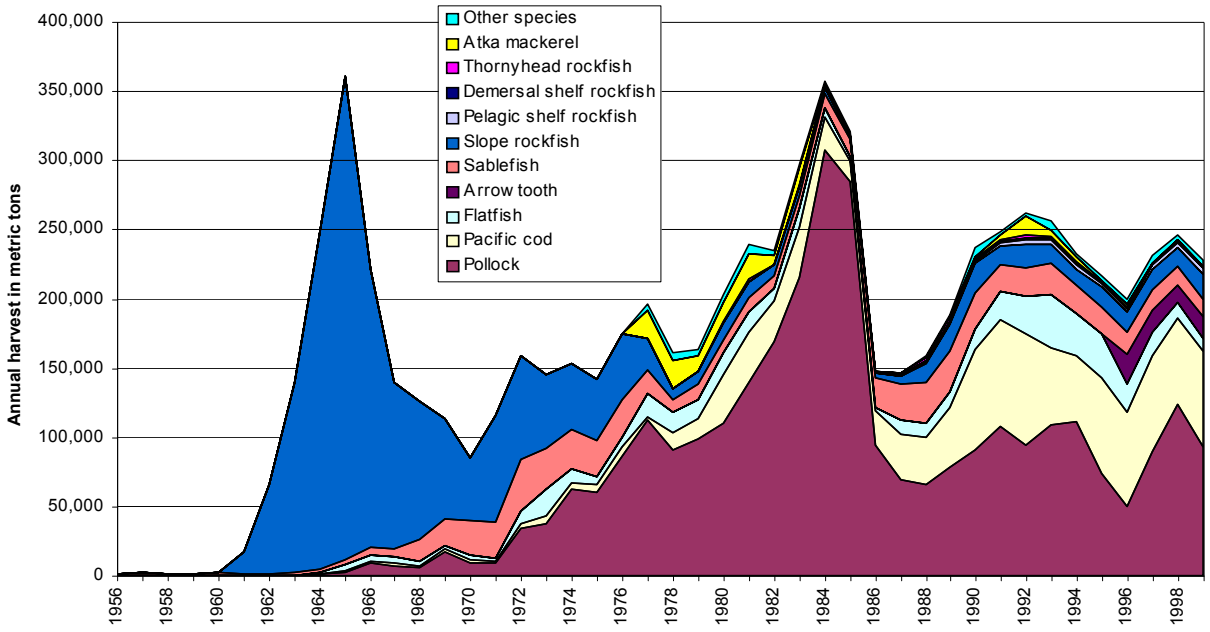
Source: Catch statistics from NMFS 2001a

Figure 2.5-2 Groundfish harvests in the Aleutian Islands subarea by species, 1962-1999



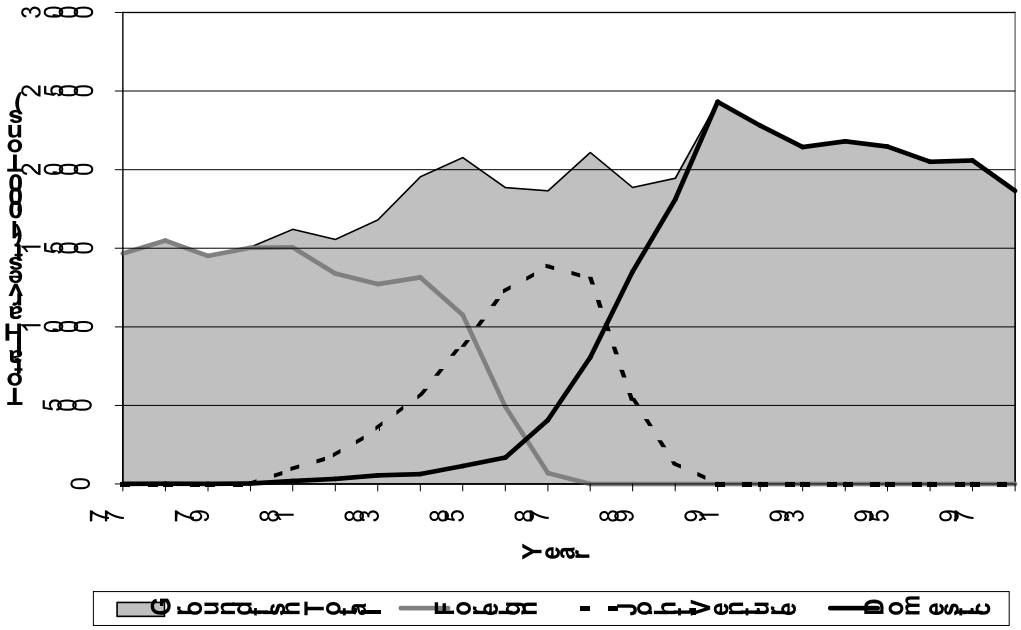
Source: Catch statistics from NMFS 2001a

Figure 2.5-3 Groundfish harvests in the Gulf of Alaska by species, 1958-1999



Source: Catch statistics from NMFS 2001a

Figure 2.5-4 Foreign, joint-venture, and domestic groundfish fishing and processing, 1977-1998



Source: Catch statistics from NMFS 2001a

2.5.1 Overview of the Pollock, Pacific cod, and Atka mackerel Fisheries

The 2001 BSAI and GOA groundfish total allowable catch (TACs) amounts are apportioned by area, season, gear, and sector. In total, 133 separate TAC allocations and apportionments must be monitored and managed. An additional 53 separate gear, fishery, and seasonal allocations and apportionments of established prohibited species catch (PSC) limits must be similarly monitored and enforced. Authorized catch amounts are specified annually based on the best available scientific information on status of stocks and regulatory provisions for allocation and apportionment of TACs and PSC limits. The 2001 harvest specifications were implemented by an emergency interim rule to accommodate new protection measures for Steller sea lions and were published in the Federal Register on January 22, 2001 and July 17, 2001 (66 FR 7276 and 66 FR 37167, respectively).

Gear types authorized by the FMPs are trawl, hook-and-line, pot, jig, and other gear as defined in regulations. Gear types and sector allocations for specific BSAI fisheries in 2001 are listed in Table 2.5-1. In the BSAI, pollock is allocated among four sectors, with 10% of the TAC allocated to the CDQ Program, 4% held in reserve for incidental catch, and the remainder split among the inshore, mothership, and catcher/processor sectors in the ratio of 50:10:40, respectively. During 2000 and the first half of 2001, the pollock TAC was further allocated among four seasons inside the Steller sea lion conservation area (SCA) and between two seasons outside of the SCA. For 2001, the SCA harvest limits were removed for the second half of the year with the extension of the 2001 emergency interim rule for the harvest specifications and Steller sea lion protection measures (66 FR 37167, July 17, 2001).

The BSAI Pacific cod TAC also was seasonally allocated to two seasons with a 60/40 % split. For all other BSAI fisheries (except sablefish), 7.5% of the TAC is held as reserve for the Western Alaska Community Development Quota Program (CDQ). After removal of the CDQ reserve for Pacific cod, the remainder is allocated to vessels using jig (2%), hook-and-line and pot (51%) and trawl (47%) gear, with the trawl portion split evenly between catcher vessels and catcher/processors. The hook-and-line and pot gear allocation is further allocated among 4 specified sectors as shown in Table 2.5-1. For sablefish in the Bering Sea, hook-and-line and pot together are allocated 50% and trawl is allocated 50%. For Atka mackerel, 2% of the allocation goes to jig gear. 15% of each target species or species group, except for fixed gear sablefish, is placed in a non-specified reserve category that is reapportioned to target fishery categories as fishery management needs require.

Table 2.5-1 Regulatory allocations of 2001 TAC specifications for pollock, Pacific cod, and Atka Mackerel in the BSAI.

Species[1]	Gear		Season		Other Allocations and Reserves	
Pollock[2]	None		Season dates (inside SCA)[3]	%TAC	CDQ	10%
			A season: 1/20 to 4/1	30%		
			B season: 4/1 to 6/10	10%	Incidental bycatch	5%
			C season: 6/10 to 8/20	30%		
			D season: 8/20 to Nov 1	30%	Of the remaining TAC:	
					Inshore	50%
					Mothership	10%
					Catcher/proc.	40%
Pacific cod	Jig	2%	A season	60%	Trawl allocation is split:	
	Hook-&-line/pot	51%	B season	40%	Catcher vessels 50%	
	- H&L C/P 80.0%		**Trawl**		Catcher/processors 50%	
	- pot 18.3%		A season 1/20 to 6/10			
	- < 60 ft 1.4%		B season 6/10-11/1			
	- H&L CV 0.3%		**Hook&line over 60 Ft. LOA**		7.5% of TAC to CDQ reserve	
	Trawl	47%	A season 1/20-6/10			
			B season 8/15-12/31			
			Pot over 60 ft LOA			
			A season 1/20-6/10			
			B season 9/1-12/31			

Notes: 1. Except for pollock and sablefish, 25% of each initial TAC (TAC minus reserves) is made available January 1 under interim specifications. The remainder is made available when the final specifications supercede the interim specifications, generally in February or March.

2. AFA Allocations.

A. Pollock CDQ - effective January 1, 1999, 10 percent of the total allowable catch of pollock in the Bering Sea and Aleutian Islands Management Area shall be allocated as a directed fishing allowance to the western Alaska CDQ program .
B. Inshore/Offshore. - effective January 1, 1999, the remainder of the pollock total allowable catch in the Bering Sea and Aleutian Islands Management Area, after the subtraction of the allocation under subsection (a) and the subtraction of allowances for the incidental catch of pollock by vessels harvesting other groundfish species (including under the western Alaska community development quota program) shall be allocated as directed fishing allowances as follows.
(1) 50% to catcher vessels for processing by the inshore component;
(2) 40% to catcher/processors and catcher vessels for processing by catcher/processors in the offshore component; and
(3) 10% to catcher vessels for processing by motherships in the offshore component.

3. During the second half of 2001, no SCA harvest limit were implemented during the C/D season

In the GOA (Table 2.5-2), 20% of pollock, cod, flatfish and "other" species may be held for initial reserve to provide management the flexibility needed to prevent the catch from exceeding the TAC. The pollock directed fishing allowance is allocated 100% to the inshore sector. For Pacific cod, the allocation is split 90% to the inshore sector and 10% to the offshore sector. Sector allocations are not established for flatfish, rockfish, or other species in the GOA.

Table 2.5-2 Regulatory allocations of 2001 TAC specifications for pollock and Pacific cod in the GOA.

Species	Gear	Season		Other Allocations and Reserves
Pollock	None	Western and central GOA:		Inshore component
		1/20 to 3/1--1st allowance	30%	100% Offshore
		3/15 to 5/31--2nd allowance	15%	(bycatch)
		8/20 to 9/15--3rd allowance...	30%	
		10/1 to 11/1--4th allowance..	25%	
		Eastern GOA:		
		1/1 to 12/31	100%	20% of TAC to initial reserve

2.5.1.1 The Directed Fishery for Pollock

A description of the BSAI and GOA pollock fisheries and their management is presented in section 2.7.7 of the Draft Programmatic SEIS (NMFS 2001a). The most recent status of stock information on the BSAI and GOA groundfish resources is contained in the 2000 Stock Assessment and Fishery Evaluation (SAFE) reports prepared for the 2001 fisheries (NPFMC 2000c, NPFMC 2000d).

Pollock (*Theragra chalcogramma*) is the most abundant species within the eastern Bering Sea (EBS) and the second most abundant groundfish stock in the GOA. It is widely distributed throughout the North Pacific in temperate and subarctic waters (Wolotira *et al.* 1993). Pollock is a semidemersal schooling fish, which becomes increasingly demersal with age. Approximately 50 percent of female pollock reach maturity at age four, at a length of approximately 40 cm. Pollock spawning is pelagic and takes place in the early spring on the outer continental shelf. In the EBS, the largest concentrations occur in the southeastern area north of Unimak Pass. In the GOA, the largest spawning concentrations occur in Shelikof Strait and the Shumagin Islands (Kendall *et al.* 1996). Juvenile pollock are pelagic and feed primarily on copepods and euphausiids. As they age, pollock become increasingly piscivorus and can be highly cannibalistic, with smaller pollock being a major food item (Livingston 1991). Pollock are comparatively short lived, with a fairly high natural mortality rate estimated at 0.3 (Hollowed *et al.* 1997, Wespestad and Terry 1984) and maximum recorded age of around 22 years.

Although stock structure of pollock is not well defined (Wespestad 1993), three stocks of pollock are recognized in the BSAI for management purposes: EBS, Aleutian Islands and Aleutian Basin (Wespestad *et al.* 1997). Pollock in the GOA are thought to be a single stock (Alton and Megrey 1986) originating from springtime spawning in Shelikof Strait (Brodeur and Wilson 1996).

Pollock supports the largest fishery in Alaskan waters. In the BSAI, pollock comprise 75-80 percent of the groundfish catch. In the GOA, pollock constitute 25-50 percent of the groundfish catch. In the BSAI,

pollock can only be targeted with pelagic trawl gear to minimize the potential interaction with Pacific halibut, crab, and other groundfish species and to reduce the magnitude of bottom disturbance. Pollock are also caught with bottom-trawl gear as bycatch from other fisheries.

In the BSAI, annual TAC amounts are allocated by season, sector, and to some extent, inside and outside Steller sea lion critical habitat (CH). The fishing season has traditionally been separated into two parts, a roe season during early winter, and a surimi/filet season during the second half of the year. Currently, to minimize the potential indirect interaction with Steller sea lions (*Eumetopias jubatus*), the seasons have been managed to occur over broader areas and over seasons that are less contracted in time. Sector allocations between inshore and offshore processing components were implemented under a series of fishery management plan amendments starting in 1992. Inshore/offshore amendments still direct the allocation of pollock in the GOA (100 percent of the directed fishing allowance is allocated to the inshore sector). The sector allocations of BSAI pollock currently are governed by the American fisheries Act, which was signed into law in October 1998. A detailed discussion of the history and allocation measures implemented for the pollock fisheries is presented in section 3 of the Draft EIS prepared on AFA provisions (NMFS 2001c).

Section 2.7.7.2 of the Draft Programmatic SEIS (NMFS 2001a) summarizes specific AFA provisions as they relate to the allocation of the annual TAC of Bering Sea subarea pollock. The Draft Programmatic SEIS also presents in Table 2.7-33 a hypothetical example of a 1 million mt pollock TAC for the Bering Sea subarea and percentage of TAC allocated to different sectors as directed fishing allowances under the AFA.

Since 1999, directed fishing for pollock in the Aleutian Island subarea has been prohibited as a result of reasonable and prudent alternatives developed for the pollock fishery under section 7 consultations conducted under the ESA. Section 2.7.7.2 of the Draft Programmatic SEIS also describes management measures that were implemented by emergency interim rules in 2000 to spatially and temporally distribute the Bering sea pollock fishery (NMFS 2001a). Under 2001 Steller sea lion protection measures, the Bering Sea pollock fishery is distributed spatially and temporally and pollock trawl exclusion zones are expanded around important sea lion rookeries and haulouts. These measures and protection zones were implemented under emergency interim rulemaking (66 FR 7276, January 22, 2001; 66 FR 37167, July 17, 2001).

The Draft Programmatic SEIS (NMFS 2001a) notes the difficulty in separating out the effects on fishing patterns that resulted from measures to protect Steller sea lions from the AFA. It is clear, however, that whatever the cause, weekly localized catch rates of pollock decreased with the establishment of pollock co-ops authorized under the AFA. Furthermore, increased potential exists for pollock bycatch reduction under this scenario, because of the removal of derby-like fishing conditions. Removing the race for the fish (increased length of fishing season and lower daily catch rates) allows fishermen to spend time searching for the size fish they desire and, therefore, affects fishing behavior and patterns.

Sections 5 and 6 of the 2000 Biological Opinion (NMFS 2000a) assessed the effects of the AFA on the BSAI groundfish fisheries as being largely related to ownership restrictions and restrictions on the number of vessels in the fishing fleet, allocation of pollock among the four sectors in Bering Sea, improving observer coverage and assessment of tons caught, restrictions in other fisheries (including fisheries in the GOA) of vessels benefitting from the AFA, and requirements for formation of cooperatives within sectors. These allocations have altered the nature of the pollock fishery by eliminating the race for fish, and allowing for better temporal dispersion of catch. The formation of cooperatives may also facilitate spatial dispersion of the catch to the extent that vessels can be more deliberative about where and when they fish to maximize profit. The 2000 Biological Opinion (Page 214) concludes:

It seems clear that cooperatives following the implementation of the AFA (see discussion in section 5[of the 2000 Biological Opinion]) resulted in a decrease in adverse impacts on the western population of Steller sea lions. The pollock fishery was not only slower in the BSAI in 1999 and 2000 due to AFA, it also employed fewer boats and had less discards. Methods that encourage fishermen to work together to solve these problems on a voluntary basis have promise and are often superior in situations where enforcement is difficult.

2001 management measures

Steller sea lion protection measures include the spatial and temporal dispersion of fishing effort for pollock. The pollock harvest is over 2 seasons outside of the Steller sea lion conservation area (SCA) and for 4 seasons within the SCA. Table 2.5-3 provides the 2001 allocations for the eastern Bering Sea pollock harvest. Open and closed areas are established around rookeries and haulout sites. No pollock fishing is allowed in the closed areas (Tables 21 and 22 of 50 CFR part 679 as modified by the amended 2001 emergency rule implementing Steller sea lion protection measures for the second half of 2001 (66 FR 37167, July 17, 2001)). To date, catches inside and outside the SCA in 2001 have been maintained under seasonal harvest limits. For the second half of 2001, the SCA harvest limit was eliminated and the C and D seasons are combined for the entire eastern Bering Sea.

Table 2.5-3 2001 Eastern Bering Sea Pollock Seasonal Allocations based on 1.4 million mt TAC.

Season	A	B	C/D
Season dates	Jan 20 - Mar 31	Apr 1 - Jun 10	Jun 11 - November 1
Outside SCA	A + B (40 % annual TAC) **560,000 mt**		C + D (60 % annual TAC) **840,000 mt**
Inside SCA	**166,751 mt**	**55,497 mt**	

2.5.1.2 The Directed Fishery for Pacific cod

A description of the BSAI and GOA Pacific cod fisheries and their management is presented in section 2.7.7 of the Draft Programmatic SEIS (NMFS 2001a). The most recent status of stock information on the BSAI and GOA groundfish resources is contained in the 2000 Stock Assessment and Fishery Evaluation (SAFE) reports prepared for the 2001 fisheries (NPFMC 2000c, NPFMC 2000d). The federal Pacific cod TACs in the GOA are affected by a developing Pacific cod fishery in Alaska State waters. Since the beginning of a separately managed Pacific cod fishery by the State of Alaska in 1998, the federally managed TACs have been adjusted downward from ABC levels by the amount of guideline harvest levels (GHLs) established by the State. The combined State waters Pacific cod GHLs in the GOA were 16,465 mt in 1999 (64 FR 12094, March 11, 1999) and are 16,400 mt in 2001 (66 FR 7276, January 22, 2001).

Pacific cod is a demersal species that occurs on the continental shelf and upper slope from Santa Monica Bay, California through the GOA, Aleutian Islands, and EBS to Norton Sound (Bakkala 1984). The Bering Sea represents the center of greatest abundance, although Pacific cod are also abundant in the Gulf and Aleutian Islands (OCSEAP 1987). GOA, Bering Sea, and Aleutian Islands cod stocks are genetically indistinguishable (Grant *et al.* 1987), and tagging studies show that cod migrate seasonally over large areas (Shimada and Kimura 1994).

In the late winter, Pacific cod converge in large spawning masses over relatively small areas. Major aggregations occur between Unalaska and Unimak Islands, southwest of the Pribilof Islands and near the Shumagin group in the western Gulf (Shimada and Kimura 1994). Spawning takes place in the sublittoral-bathyal zone (the area of the continental shelf and slope [40-290 m]) near the bottom

The Pacific cod fishery is the second largest Alaskan groundfish fishery. In 1999, Pacific cod constituted 12 percent of the groundfish catch in the BSAI and 30 percent of the groundfish catch in the GOA. The fishery for Pacific cod is conducted with bottom trawl, hook-and-line, pot, and jig gear. Of these, the fishery conducted with jig gear is by far the smallest. More than 100 vessels participate in each of the three larger fisheries. The age at 50 percent recruitment varies between regions. For trawl, longline, and pot gear, the age at 50 percent recruitment in the EBS is approximately 4, 4, and 5 years, respectively (Thompson and Dorn 1999). For all three gears, the age at 50 percent recruitment in the GOA is approximately 6 years (Thompson *et al.* 1999). The trawl fishery is typically concentrated during the first few months of the year, whereas fixed-gear fisheries may sometimes run essentially year-round. Bycatch of crab and halibut often causes the Pacific cod fisheries to close prior to reaching the TAC. In the Bering Sea, trawl fishing is concentrated immediately north of Unimak Island, whereas the longline fishery is distributed along the shelf edge to the north and west of the Pribilof Islands. In the GOA, the trawl fishery has centers of activity around the Shumagin Islands and south of Kodiak Island, while the longline fishery is located primarily in the vicinity of the Shumagins. The most common Pacific cod products for at -sea processors are headed and gutted fish and fillets. The most common products for shoreside processors are salted cod, fillets, and fish meal..

As shown in Table 2.5-1, the BSAI Pacific cod TAC is allocated among different gear groups and sectors. In fall of 2000, NMFS issued regulations implementing Amendment 64 to the BSAI groundfish fishery management plan. Amendment 64 established the following apportionment of the hook-and-line and pot gear allocation after deducting incidental catch of Pacific cod in other groundfish fixed-gear fisheries:

80 percent to hook-and-line catcher/processors
0.3 percent to hook-and-line catcher vessels
18.3 percent to pot vessels
1.4 percent to hook-and-line or pot vessels less than 60 ft

In April 2000, the Council adopted proposed FMP Amendment 67 that would build upon the existing license limitation program (LLP) by implementing participation and landings requirements and establishing species and gear endorsements for the hook-and-line and pot gear BSAI Pacific cod fisheries. As proposed, this amendment would further limit the number of vessels allowed to fish for Pacific cod with fixed gear in the BSAI. The proposed amendment package is expected by NMFS to be submitted for Secretarial review late summer 2001.

2001 management measures

In accordance with Pub. L. 106-544, NMFS phased in measures contained in the 2000 Biological Opinion RPA by emergency interim rule (66 FR 7276, January 22, 2001; 66 FR 37167, July 17, 2001) to protect the western population of Steller sea lions. For BSAI Pacific cod this includes a seasonal apportionment of TAC (less the CDQ reserve) of 60 percent of the annual TAC (104,340 mt) from January 1 to June 10 and 40 percent of the annual TAC (69,560 mt) from June 10 to December 31, 2001. In the GOA, seasonal apportionments of Pacific cod TAC also were specified in the Central and Western Regulatory Areas at 60 percent of the annual TAC from January 1 to June 10 and 40 percent of the annual TAC from June 10 to

December 31, 2001. With the extension and amendments to the emergency interim regulations in July, the B season was delayed to September 1. The trawl fisheries for BSAI and GOA Pacific cod are prohibited after October 31.

All hook-and-line Pacific cod fishing in the GOA was put on bycatch status by February 26 because of halibut bycatch. Pot and jig gear Pacific cod fishing in the western and inshore Central areas were put on bycatch status by April 26 because the seasonal TAC was reached. Western, Central, and Eastern GOA Pacific cod trawl fisheries were put on bycatch status by late April because of halibut bycatch. On March 29, 2001, NMFS published an amendment to the January 22, 2001 emergency rule exempting jig vessels and vessels < 60 feet (18.3m) in the BSAI hook-and-line and pot gear fishery from the 3 nm no fishing zone around haulouts (66 FR 17083). This amendment also removed the seasonal Pacific cod BSAI allocation for these vessels. After June 10, 2001 and until July 17, 2001, critical habitat areas were either opened or closed to fishing for groundfish, including Pacific cod, around rookeries and haulout. On June 10, 2001, an amendment to the January 18, 2001, emergency interim rule (66 FR 7276, January 22, 2001) was implemented to prohibit fishing for BSAI Pacific cod by vessels equal to or greater than 60 feet LOA using pot or hook-and-line gear and for all vessels in the Western and Central GOA regulatory areas (66 FR 31845). This action was necessary to implement the Council's recommendation to delay the second GOA Pacific cod season to September 1 and to delay the BSAI Pacific cod season for vessels equal to or greater than 60 feet LOA using pot or hook-and-line gear to September 1 and August 15, respectively. This action was necessary to avoid the "race for the fish" before the emergency rule extension and amendments were in place and to reduce salmon and halibut bycatch. These new season dates are part of the amendment to the emergency rule that became effective July 18, 2001, and that established new open and closed areas for the Pacific cod fisheries and established a new starting dates for the second Pacific cod season in 2001 (66 FR 37167, July 17, 2001).

2.5.1.3 The Directed Fishery for Atka mackerel

A description of the BSAI Atka mackerel fishery and its management is presented in section 2.7.7 of the Draft Programmatic SEIS (NMFS 2001a). The most recent status of stock information on the BSAI and GOA groundfish resources is contained in the 2000 Stock Assessment and Fishery Evaluation (SAFE) reports prepared for the 2001 fisheries (NPFMC 2000c, NPFMC 2000d).

Atka mackerel are distributed from the east coast of the Kamchatka Peninsula, throughout the Aleutian Islands and the EBS, and eastward through the GOA to southeast Alaska (Wolotira *et al.* 1993). Their current center of abundance is in the Aleutian Islands, with marginal distributions extending into the southern Bering Sea and into the western GOA (Lowe and Fritz, 1999). Adults are semi-pelagic and spend most of the year over the continental shelf in depths generally less than 200 m. Adults migrate annually to shallow coastal waters during spawning, forming dense aggregations near the bottom (Morris 1981, Musienko 1970).

Atka mackerel are one of the most abundant groundfish species in the Aleutian Islands, where they are the target of a directed trawl fishery (Lowe and Fritz 1999). Although Atka mackerel comprise a separate TAC category in the GOA, abundance and TAC amounts are inadequate to support a directed fishery given that the full TAC amount is needed for bycatch in other fisheries. As such, Atka mackerel in the GOA are currently managed as a bycatch fishery.

The directed fishery for Atka mackerel is prosecuted by catcher-processor bottom trawlers. The patterns of the fishery generally reflect the behavior of the species in that the fishery is highly localized, occurring in the same few locations each year, generally occurs at depths between 100 and 200 m (Lowe and Fritz 1999).

Important Atka mackerel fishery locations include Seguam Bank, Tanaga Pass, north of the Delarof Islands, Petrel Bank, south of Amchitka Island, east and west of Kiska Island, and on the seamounts and reefs near Buldir Island.

Steller sea lion protection measures include the spatial and temporal dispersion of fishing effort for Atka mackerel. The Atka mackerel harvest is over 2 seasons with critical habitat limits for the Western and Central AI areas. Table 2.5.4 provides the 2001 allocations for the AI Atka mackerel harvest. Inside critical habitat was closed to trawling February 2 and February 13 in areas 542 and 543, respectively, as the CH limits were reached for these areas.

Table 2.5-4 Atka mackerel - Aleutians Islands area 2001 seasonal allocations based on 69,300 mt TAC.

Area	A Jan 1 - April 15		B September 1-November 1	
	Total	CH limit	Total	CH limit
Western AI District (543)	12,904 mt	6,194 mt	12,904 mt	6,194 mt
Central AI District (542)	15,540 mt	7,148 mt	15,540 mt	7,148 mt
Eastern AI/BS subarea*	3,572 mt	na	3,572 mt	na

*Does not include the 1% jig allocation (72 mt) which is not seasonally apportioned.
na = not available

To address the possibility that the fishery creates localized depletions of Atka mackerel and adversely modifies Steller sea lion critical habitat by disproportionately removing prey, the Council, in June 1998, passed a fishery management regulatory amendment which proposed a four-year timetable to temporally and spatially disperse and reduce the level of Atka mackerel fishing within Steller sea lion critical habitat in the BSAI. The temporal dispersion is accomplished by dividing the BSAI Atka mackerel TAC into two equal seasonal allowances. The first allowance is made available for directed fishing from January 1 to April 15 (A season), and the second seasonal allowance is made available from September 1 to November 1 (B season). The spatial dispersion is accomplished through maximum catch percentages of each seasonal allowance that can be caught within Steller sea lion critical habitat (CH) as specified for the central and western Aleutian Islands. No critical habitat closures are established for the eastern Aleutian Islands district, but 20 nm trawl exclusion zones around the Seguam and Agligadak are in effect year-round. The regulations implementing these management changes became effective January 22, 1999. The four-year timetable for spatial dispersion of the Atka mackerel fishery outside of critical habitat is:

Aleutian Island District

Year(s)	Area 541		Area 542		Area 543	
	Inside CH	Outside CH	Inside CH	Outside CH	Inside CH	Outside CH
1999			80%	20%	65%	35%
2000			67%	33%	57%	43%
2001			54%	46%	49%	51%
2002			40%	60%	40%	60%

2.5.1.4 The CDQ Fishery

The Western Alaska Community Development Quota (CDQ) Program was created by the North Pacific Fishery Management Council (Council) in 1992 as part of the inshore/offshore allocation of pollock in the Bering Sea and Aleutian Islands. The Council established the CDQ Program to provide fishermen who resided in western Alaska an opportunity to participate in the Bering Sea and Aleutian Islands fisheries that had been foreclosed to them because of the high capital investment needed to enter the fishery. The purpose of the CDQ Program was to help western Alaska communities to diversify their local economies and to provide new opportunities for stable, long-term employment.

Currently, 65 communities are eligible to participate in the CDQ Program. The CDQ communities are located within 50 nautical miles of the Bering Sea coast or on an island in the Bering Sea. Approximately 27,000 people live in the CDQ communities, which are small communities populated predominantly by Alaska Native people. These 65 communities have formed the following six non profit corporations called "CDQ groups" to manage and administer their CDQ allocations, investments, and economic development projects:

Aleutian Pribilof Island Community Development Association (APICDA)
Bristol Bay Economic Development Corporation (BBEDC)
Central Bering Sea Fishermen's Association (CBSFA)
Coastal Villages Region Fund (CVRF)
Norton Sound Economic Development Corporation (NSEDC)
Yukon Delta Fisheries Development Association (YDFDA)

Table 2.5-5 lists the communities that are members of each CDQ group. Table 2.5-6 lists the allocation of the 2001 CDQ reserve among the 6 CDQ groups authorized to receive allocations.

Through the CDQ Program, a portion of the Bering Sea and Aleutian Islands area (BSAI) catch limits for crab, halibut, groundfish, and prohibited species are allocated to eligible western Alaska communities. The percentage of each catch limit allocated to the CDQ Program is determined by the AFA for pollock (10%), the Magnuson-Stevens Act for crab (7.5%), the Fishery Management Plan for the Groundfish Fisheries of the Bering Sea and Aleutian Islands area (FMP) for all other groundfish and prohibited species (7.5%, except 20% for fixed gear sablefish), and 50 CFR 679 for halibut (20% to 100%). These allocations to the CDQ Program are called "CDQ reserves."

With the addition of the remainder of the groundfish species and the prohibited species allocations in 1998, NMFS implemented regulations combining the two separate CDQ fisheries (pollock and fixed gear halibut and sablefish) with the new groundfish and prohibited species into the multispecies groundfish and halibut CDQ fisheries. Under these regulations, all catch of all groundfish and prohibited species by vessels fishing for CDQ groups accrue against the CDQ groups' allocations and none of the groundfish or prohibited species caught in the groundfish CDQ fisheries accrues against the non-CDQ fisheries TACs or prohibited species catch limits. The CDQ groups are required to manage their catch to stay within all of their CDQ allocations. NMFS implemented this system of strict quota accountability because the Council recommended that all bycatch in all of the CDQ fisheries should accrue against the CDQ allocations and none of this catch should be subtracted from the portion of the quotas available to the non-CDQ fisheries.

In 2000, approximately 180,000 metric tons of groundfish, 3 million pounds of halibut, and 3 million pounds of crab were allocated to the CDQ Program. The six CDQ groups had total revenues in 2000 of approximately $63 million, most of this from pollock CDQ royalties. Since 1992, the CDQ groups have accumulated assets worth approximately $187 million, including ownership of small local processing plants, catcher vessels, and catcher/processors that participate in the groundfish, crab, salmon, and halibut fisheries. The CDQ groups have used their CDQ allocations to develop local fisheries, invest in a wide range of fishing businesses outside the communities, and provide residents with education, training, and job opportunities in the fishing industry.

Table 2.5-5 Eligible Western Alaska Communities and the CDQ Groups.

Aleutian Pribilof Island Community Development Association (APICDA)

Akutan
Atka
False Pass
Nelson Lagoon
Nikolski
Saint George

Bristol Bay Economic Development Corporation (BBEDC)

Aleknagik
Clark's Point
Dillingham
Egegik
Ekuk
Ekwok
Levelock
Manokotak
Naknek
Pilot Point
Port Heiden
Portage Creek
South Naknek
Sovonoski/King Salmon
Togiak
Twin Hills
Ugashik

Central Bering Sea Fishermen's Association (CBSFA)

Saint Paul

Coastal Villages Region Fund (CVRF)

Chefornak
Chevak
Eek

CVRF (cont.)

Goodnews Bay
Hooper Bay
Kipnuk
Kongiganak
Kwigillingok
Mekoryuk
Napakiak
Napaskiak
Newtok
Nightmute
Oscarville
Platinum
Quinhagak
Scammon Bay
Toksook Bay
Tuntutuliak
Tununak

Norton Sound Economic Development Corporation (NSEDC)

Brevig Mission
Diomede
Elim
Gambell
Golovin
Koyuk
Nome
Saint Michael
Savoonga
Shaktoolik
Stebbins
Teller
Unalakleet
Wales
White Mountain

Yukon Delta Fisheries Development Association (YDFDA)

Alakanuk
Emmonak
Grayling
Kotlik
Mountain Village
Nunam Iqua (Sheldon Point)

Table 2.5-6 Multispecies CDQ Program Allocations in 2001.

Groundfish CDQ Species	2001 TAC	2001 CDQ Reserve	CDQ Group Amounts (metric tons)						
			APICDA	BBEDC	CBSFA	CVRF	NSEDC	YDFDA	TOTAL
BS FG Sablefish	780	156	23	34	28	0	31	39	156
AI FG Sablefish	1,875	375	56	75	0	113	75	56	375
BS Sablefish	780	59	10	12	6	10	11	11	59
AI Sablefish	625	47	11	11	4	5	5	11	47
BS Pollock - total	1,400,000	140,000	19,600	29,400	5,600	33,600	32,200	19,600	140,000
AI Pollock	2,000	200	28	42	8	48	46	28	200
Bogoslof Pollock	1,000	100	14	21	4	24	23	14	100
Pacific Cod	188,000	14,100	2,256	2,820	1,410	2,397	2,538	2,679	14,100
WAI Atka Mackerel	27,900	2,093	628	314	167	314	293	377	2,093
CAI Atka Mackerel	33,600	2,520	756	378	202	378	353	454	2,520
EAI/BS Atka Mackerel	7,800	585	176	88	47	88	82	105	585
Yellowfin Sole	113,000	8,475	2,373	2,034	678	509	593	2,288	8,475
Rock Sole	75,000	5,625	1,350	1,294	450	619	619	1,294	5,625
BS Greenland Turbot	5,628	422	84	93	30	63	63	89	422
AI Greenland Turbot	2,772	208	33	42	10	44	42	37	208
Arrowtooth Flounder	22,011	1,651	396	363	149	182	165	396	1,651
Flathead Sole	40,000	3,000	600	600	300	450	450	600	3,000
Other Flatfish	28,000	2,100	525	483	189	210	210	483	2,100
BS Pacific Ocean Perch	1,730	130	23	27	9	23	23	23	130
WAI Pacific Ocean Perch	4,740	356	107	53	28	53	50	64	356
CAI Pacific Ocean Perch	2,560	192	58	29	15	29	27	35	192
EAI Pacific Ocean Perch	2,900	218	65	33	17	33	31	39	218
BS Other Red Rockfish	135	10	2	2	1	2	2	2	10
AI Sharpchin/Northern	6,745	506	152	76	40	76	71	91	506
AI Shortraker/Rougheye	912	68	15	12	5	12	12	12	68
BS Other Rockfish	361	27	7	6	2	3	4	6	27
AI Other Rockfish	676	51	12	9	4	9	9	9	51
Other Species	26,500	1,988	358	398	199	318	318	398	1,988

TABLE 2.5-6 (cont.) Multispecies CDQ Program Allocations in 2001 (metric tons).

Prohibited Species	2001 TAC	2001 CDQ Reserve	APICDA	BBEDC	CBSFA	CVRF	NSEDC	YDFDA	TOTAL
Zone 1 Red King Crab	97,000	7,275	2,110	1,673	582	509	509	1,892	7,275
Zone 1 Bairdi Tanner Crab	730,000	54,750	14,235	13,140	4,380	4,380	4,380	14,235	54,750
Zone 2 Bairdi Tanner Crab	2,070,000	155,250	35,708	34,155	13,973	18,630	17,078	35,708	155,252
Opilio Tanner Crab	4,350,000	326,250	78,300	71,775	29,363	35,888	32,625	78,300	326,251
Pacific Halibut	4,575	343	75.460	75.460	30.870	41.160	41.160	78.890	343.000
Chinook Salmon	41,000	3,075	461	646	123	707	707	431	3,075
Non-Chinook Salmon	42,000	3,150	473	662	158	725	693	441	3,152

Values are in metric tons.

2.5.1.5 Incidental Catch of Pollock, Pacific cod and Atka mackerel in Other Directed Fisheries for Groundfish

While fishery participants may target a certain species, they are not 100% effective in limiting their catch to that specific target. Other fishes and marine life are also caught to varying degrees depending on target species, gear type and fishing method, area fished and habitat type, season, depth, and other physical and biological factors. These other fishes and marine life are referred to as "incidental catch" or "bycatch."[1] Whether a species or stock is caught as a target by a fishing vessel, or incidentally by a vessel fishing for another target species, the catch is credited against the overall total allowed for a species or stock. That is, TACs are intended to represent the sum of all catch including targeted catch and incidental catch.

The fishery for a target species may be categorized as open to directed fishing, closed to directed fishing, or prohibited. When a fishery for a species is open to directed fishing, vessels are allowed to target and retain it with no restrictions on the amount harvested. If the catch is expected to reach the TAC and some amount of TAC must be held in reserve for incidental catch in other fisheries, then a portion of the TAC may be established as a "directed fishing allowance," meaning that directed fishing is allowed only on that portion of the TAC. For example, for the BSAI pollock fishery, 4% of the TAC is established as an "incidental catch allowance" and the directed fishery is based on the remaining 96% of the TAC. For fisheries other than BSAI pollock, the amount for a "directed fishing allowance" is determined by NMFS as the season progresses, and is established by an in-season action. Once the directed fishing allowance for a species is taken, the fishery is closed to directed fishing. When a species is closed to directed fishing, vessels are allowed to retain up to a maximum retainable amount specified in regulations at 50 CFR 679.20 (e) and (f) at any time during the fishing trip. This provision does allow targeting for the species on a haul-by-haul basis, as long as the maximum retainable amount for the trip is not exceeded at any time. If the catch reaches the TAC, then the status changes to "prohibited," and retention is prohibited for the rest of the year. If NMFS determines that harvest of a species will reach the overfishing level (OFL), then the Regional Administrator has the authority to close the fisheries in which the species is taken to prevent overfishing. Since 1998, discarding of pollock and Pacific cod is prohibited under the regulations at 50 CFR 679.27, except in fisheries where these species are on "bycatch only" status. That case, vessel operators are required to keep amounts of incidentally caught pollock and Pacific cod up to the maximum retainable bycatch percentage, and then discard the rest.

Appendix E1 contains data summarizing the 1999 catch of pollock, Pacific cod, and Atka mackerel in the BSAI and GOA groundfish fisheries by gear, federal reporting area, and processing mode. Tables 2.5-7 through 2.5-9 summarize this information to show where most of the catch is occurring. The year 1999 was chosen as a representative baseline for catch by gear given that the catch and distribution of groundfish harvest in 2000 was impacted by a court ordered injunction that prohibited commercial trawling for groundfish in designated Steller sea lion critical habitat as of August 2000, for the remainder of the year. Catch information for 2001 is available only for the first half of the year. Thus 1999 is considered the most recent full year for which representative catch data are available and is used in this SEIS as the most representative year from which to characterize the current groundfish fisheries.

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[1] The terms "incidental catch" and "bycatch" are often used to mean catch of species or marine life not targeted. In regulations, the terms are given specific meanings. "Incidental catch" applies to the unintended catch of species that may be targeted or the unintended catch of species other than prohibited species. "Bycatch" is used in the regulations to refer to the incidental catch of prohibited species.

BSAI pollock are caught as bycatch in other directed fisheries, but because pollock occur primarily in well defined aggregations that can be avoided, the impact of this bycatch is typically minimal relative to overall TAC. Discard rates through the early 1990s (discards/retained catch) of pollock in the directed fishery have been about 7-8 percent but in 1998 dropped to 1.5 percent (Ianelli *et al.* 1999). This is due to the fact that in 1998, discarding of pollock was prohibited except in the fisheries where pollock are in bycatch-only status. Incidental catches of pollock are highest in the BSAI Pacific cod, rock sole, and yellowfin sole fisheries trawl fisheries, and the GOA trawl and hook-and-line gear fisheries for Pacific cod (Table 2.5-7).

Incidental catch amounts of BSAI Pacific cod are taken primarily in the trawl fisheries for rock sole, yellowfin sole, flathead sole, and the Atka mackerel fishery in the Aleutian Islands. In the GOA, Pacific cod is taken as bycatch primarily in the trawl fisheries for rockfish, pollock, and flatfish (Table 2.5-8).

Atka mackerel are not commonly caught as bycatch in other directed fisheries. The largest amounts of discards of Atka mackerel, which are likely undersize fish, occur in the directed Atka mackerel trawl fisheries. Recent discard rates (discards/retained catch) of Atka mackerel in the directed fishery have been below 10 percent (Lowe and Fritz 1999a). Atka mackerel are also caught as bycatch in the Aleutian Islands area trawl fisheries for rockfish and Pacific cod (Table 2.5-9). It is difficult to discern the level of natural bycatch of Atka mackerel in the rockfish fisheries, as vessels may actually be targeting Atka mackerel in particular hauls, but overall they are designated as targeting rockfish on a particular trip.

Table 2.5-7 1999 catch of non CDQ pollock by area, fishery, and gear in descending order based on catch.

Management Area	TARGET	GEAR	ZONE	DESIG	PLCK (mt)	%PLCK
BSAI	P Pollock - midwater	TRW	517	S	306,736	0.31
	P	TRW	521	P	165,872	0.17
	P	TRW	517	P	114,897	0.12
	P	TRW	509	S	94,186	0.10
	P	TRW	509	P	59,785	0.06
	P	TRW	513	P	59,024	0.06
	P	TRW	521	M	36,952	0.04
	P	TRW	513	S	31,068	0.03
	P	TRW	509	M	29,410	0.03
	P	TRW	517	M	29,266	0.03
	P	TRW	513	M	9,600	0.01
	C Pacific cod	TRW	509	S	7,518	0.01
	C	TRW	509	P	6,058	0.01
	R rock sole	TRW	509	P	4,070	0.00
	Y yellowfin sole	TRW	513	P	3,201	0.00
	B pollock-bottom	TRW	509	M	2,466	0.00
	B	TRW	509	P	2,304	0.00
	Y	TRW	509	P	2,302	0.00
	L Flathead sole	TRW	513	P	2,134	0.00
	B	TRW	517	P	1,616	0.00
	Y	TRW	517	P	1,550	0.00
	Y	TRW	514	P	1,549	0.00
	P	TRW	519	S	1,399	0.00
	C	TRW	517	S	1,332	0.00
	C	TRW	517	P	1,282	0.00
	C	HAL	521	P	1,239	0.00
	L	TRW	517	P	1,198	0.00
	R	TRW	516	P	1,027	0.00
	C	HAL	517	P	845	0.00
	C	HAL	513	P	830	0.00
	C	HAL	509	P	769	0.00
	B	TRW	513	P	720	0.00
	P	TRW	521	S	658	0.00
	L	TRW	521	P	633	0.00
	B	TRW	517	M	511	0.00

NOTE: Total catch of pollock in the BSAI and GOA from which percentage amounts are calculated equal 989,777 mt and 95,637 mt, respectively. ZONE refers to Federal reporting area; DESIG refers to shoreside processor (s), catcher/processor (P), or mothership (M) processing mode. Target fisheries which accounted for less than 500 mt of BSAI pollock and 100 mt of GOA pollock are not listed, but are presented in Appendix E1. Data source: NMFS 1999 Blend Database.

Table 2.5-7 (cont.) 1999 catch of non CDQ pollock by area, fishery, and gear in descending order based on catch.

Management Area	TARGET	GEAR	ZONE	DESIG	PLCK (mt)	% PLCK
GOA	P pollock midwater	TRW	620	S	35,826	0.37
	P	TRW	630	S	28,460	0.30
	P	TRW	610	S	22,855	0.24
	P	TRW	649	S	2,209	0.02
	B Pollock-bottom	TRW	620	S	2,096	0.02
	P	TRW	640	S	1,740	0.02
	B	TRW	630	S	695	0.01
	C Pacific cod	TRW	630	S	476	0.00
	C	TRW	610	S	239	0.00
	C	TRW	620	S	149	0.00
	C	HAL	630	S	127	0.00

NOTE: Total catch of pollock in the BSAI and GOA from which percentage amounts are calculated equal 989,777 mt and 95,637 mt, respectively. ZONE refers to Federal reporting area; DESIG refers to shoreside processor (S), catcher/processor (P), or mothership (M) processing mode. Target fisheries which accounted for less than 500 mt of BSAI pollock and 100 mt of GOA pollock are not listed, but are presented in Appendix E1. Data source: NMFS 1999 Blend Database.

Table 2.5-8 1999 catch of non CDQ Pacific cod by area, fishery, and gear in descending order based on catch.

Management Area	TARGET	GEAR	ZONE	DESIG	PCOD (mt)	%PCOD
BSAI	C	HAL	521	P	32,400	0.19
	C	TRW	517	S	20,651	0.12
	C	HAL	509	P	15,183	0.09
	C	HAL	517	P	13,364	0.08
	C	HAL	513	P	13,038	0.07
	C	POT	519	S	7,219	0.04
	C	TRW	509	P	6,670	0.04
	C	TRW	541	P	6,141	0.04
	C	TRW	541	M	5,617	0.03
	C	TRW	509	S	5,428	0.03
	C	HAL	541	P	4,096	0.02
	C	HAL	542	P	3,217	0.02
	C	HAL	523	P	2,513	0.01
	R	TRW	509	P	2,082	0.01
	C	HAL	516	P	1,824	0.01
	Y	TRW	509	P	1,752	0.01
	C	POT	541	S	1,691	0.01
	L	TRW	513	P	1,572	0.01
	C	TRW	517	P	1,522	0.01
	C	POT	509	S	1,470	0.01
	C	TRW	541	S	1,452	0.01
	C	HAL	518	P	1,397	0.01
	C	TRW	521	P	1,236	0.01
	R	TRW	516	P	1,179	0.01
	C	POT	517	S	1,091	0.01
	Y	TRW	513	P	960	0.01
	Y	TRW	517	P	946	0.01
	A	TRW	541	P	943	0.01
	L	TRW	521	P	826	0.00
	C	POT	509	P	776	0.00
	L	TRW	517	P	755	0.00
	A	TRW	543	P	755	0.00
	A	TRW	542	P	717	0.00
	P	TRW	517	S	711	0.00
	Y	TRW	514	P	702	0.00
	C	HAL	524	P	698	0.00
	C	TRW	521	M	646	0.00
	C	POT	543	M	574	0.00
	C	POT	524	P	551	0.00
BSAI	C Pacific cod	POT	543	P	541	0.00
	C	POT	518	S	539	0.00

Table 2.5-8 (cont'd) 1999 catch of non CDQ Pacific cod by area, fishery, and gear in descending order based on catch.

Management Area	TARGET	GEAR	ZONE	DESIG	PCOD (mt)	%PCOD
BSAI	P pollock - midwater	TRW	521	P	494	0.00
	C	HAL	519	P	459	0.00
	P	TRW	517	P	418	0.00
	C	TRW	542	P	397	0.00
	C	HAL	543	P	389	0.00
	P	TRW	509	P	380	0.00
	P	TRW	509	S	363	0.00
	C	POT	521	P	357	0.00
	C	POT	542	P	320	0.00
	C	POT	541	P	301	0.00
	C	POT	542	M	289	0.00
	C	TRW	513	P	279	0.00
	C	HAL	512	P	271	0.00
	C	POT	513	P	254	0.00
	C	TRW	542	M	244	0.00
	P	TRW	513	P	239	0.00
	P	TRW	517	M	202	0.00
GOA	C	TRW	630	S	15,308	0.22
	C	TRW	610	S	14,348	0.21
	C	POT	630	S	7,555	0.11
	C	HAL	630	S	6,014	0.09
	C	POT	620	S	5,410	0.08
	C	HAL	610	P	5,139	0.07
	C	POT	620	P	2,932	0.04
	C	TRW	620	S	2,411	0.04
	C	POT	610	P	1,424	0.02
	C	POT	610	S	1,161	0.02
	K rockfish	TRW	630	S	880	0.01
	C	TRW	630	P	618	0.01
	C	TRW	610	P	428	0.01
	C	POT	649	S	297	0.00
	B pollock-bottom	TRW	630	S	263	0.00
	H shallow water flats	TRW	630	S	259	0.00
	D Deepwater flats	TRW	630	S	249	0.00
	X rex sole	TRW	630	P	239	0.00
	X	TRW	620	P	228	0.00
	K	TRW	630	P	215	0.00
	C	HAL	649	S	205	0.00
	P	TRW	620	S	204	0.00

NOTE: Total catch of Pacific cod in the BSAI and GOA from which percentage amounts are calculated equal 173,978 mt and 68,613 mt, respectively. ZONE refers to Federal reporting area; DESIG refers to shoreside processor (s), catcher/processor (P), or mothership (M) processing mode. Target fisheries which accounted for less than 200 mt of BSAI Pacific cod are not listed, but are presented in Appendix E1. Data source: NMFS 1999 Blend Database.

Table 2.5-9 1999 catch of non CDQ Atka mackerel by area, fishery, and gear in descending order based on catch.

Management Area	TARGET	GEAR	ZONE	DESIG	AMCK (mt)	% AMCK
BSAI	A Atka mackerel	TRW	542	P	21,520	0.38
	A	TRW	543	P	16,207	0.29
	A	TRW	541	P	14,565	0.26
	A	TRW	519	P	1,741	0.03
	K rockfish	TRW	542	P	734	0.01
	C Pacific cod	TRW	541	P	372	0.01
	K	TRW	541	P	172	0.00
	K	TRW	543	P	158	0.00
	B pollock - bottom	TRW	517	S	136	0.00
	C	TRW	542	P	98	0.00
	A	TRW	517	P	82	0.00
	T Greenland Turbot	TRW	519	P	73	0.00
	C	HAL	542	P	62	0.00
	T	TRW	517	P	60	0.00
	F Other flatfish	TRW	517	P	44	0.00
	C	TRW	517	P	35	0.00
	C	TRW	541	M	28	0.00
	Y Yellowfin sole	TRW	517	P	25	0.00
	C	TRW	519	P	21	0.00
	L Flathead sole	TRW	517	P	14	0.00
	A	TRW	518	P	12	0.00
GOA	K	TRW	610	P	140	0.498177
	P pollock-midwater	TRW	610	S	118	0.416819

NOTE: Total catch of Atka mackerel in the BSAI and GOA from which percentage amounts are calculated equal 56,231mt and 262mt, respectively. ZONE refers to Federal reporting area; DESIG refers to shoreside processor (s), catcher/processor (P), or mothership (M) processing mode. Data source: NMFS 1999 Blend Database.

2.5.2 Spatial and Temporal Fishing Patterns

Appendix E2 contains a series of tables and figures that summarize 1999 distribution of the pollock, Pacific cod, and Atka mackerel harvests in the directed fishery for each species inside and outside of Steller sea lion critical habitat (haulouts and rookeries) by week, area, and vessel type, sector, and size category. Harvest is presented by federal reporting area, as well as percentage of catch within different zones of Steller sea lion critical habitat. A description of the data used in Appendix E2 follows.

Catch data was compiled to represent catch by all groundfish vessels in the Bering Sea and Gulf of Alaska in 1999. In the database, shoreside deliveries are represented by Alaska Department of Fish and Game fish tickets; deliveries to offshore motherships, and deliveries to or catch by catcher processors ≥ 125 ft are represented by observer data; and deliveries to catcher processors < 125 ft are represented by federal weekly production reports.

In compiling the tables, catch was reported as catch of the target species (pollock, Pacific cod, or Atka mackerel) taken in landings that were in those targets. Vessels were categorized as small (S, < 60 ft), medium (M, ≥ 60 and ≤ 124 ft), and large (L, ≥ 125 ft). Reporting areas were Bering Sea or Aleutian Islands, in the BSAI area; Federal areas 610, 620, 630 and the Eastern Gulf for GOA pollock fisheries; and Eastern, Central and Western Gulf for GOA Pacific cod fisheries. The gear categories used were trawl, hook and line, pot, and jig, and the processing categories were catcher vessels and catcher processors.

All data were classified at the ADF&G state statistical area level. The state statistical area is reported on each ADF fish ticket. Observer data were assigned a state statistical area depending on the retrieval location of the haul. Weekly production report (WPR) data are reported by week and federal reporting area. WPR catch within a federal reporting area and week was assigned to state statistical areas according to either the observed catch by state statistical area for that vessel and week, or according to the observed catch by state statistical area for similar vessels operating in the same federal reporting area and week. The WPR catch was allocated to state statistical areas in proportion to the observed catch in each area.

State statistical areas were over-laid by 3, 10 and 20 nm buffers around Steller sea lion rookeries, haulouts and RPA sites (haulouts not previously included in closures) in a GIS. The area within each resulting state statistical area segment was calculated, as was the percent each segment represented of a total state statistical area. The catch from a reported state statistical area was then multiplied by the percent of the statistical area that was within the desired buffer (e.g. 3 nm or 20 nm). For instance, a state statistical area with 5% within 3 miles of a rookery or haulout would have the catch reported from that state statistical area multiplied by 0.05 to estimate the amount of catch from the statistical area that occurred within 3 nm of a rookery or haulout.

In keeping with Alaska Department of Fish and Game confidentiality standards, any cell in the tables provided that represented catch by less than 4 vessels was censored and represented in the tables by an "X." The total catch, including catch that was screened in the weekly tables, is summarized in Table 2.5-10.

Table 2.5-10 generally shows a trend of smaller vessels and vessels fishing for Pacific cod with pot gear using fishing grounds closer to shore in critical habitat compared to larger vessels and vessels fishing with hook-and-line or trawl gear. Trawl and hook-and-line vessels fishing for Pacific cod in the Gulf of Alaska were more dependent on near-shore fishing grounds than trawl and hook-and-line vessels fishing in the Bering Sea. However, vessels fishing for Pacific cod in the Aleutian Islands subarea relied heavily on fishing grounds within 20 nm of haulouts and rookeries. The BSAI catcher processors vessels fishing for Pacific

cod with hook-and-line gear were least dependent on near shore waters and harvested only 9% of their annual 1999 catch from fishing grounds within 20 nm of Steller sea lion critical habitat.

The GOA trawl pollock fishery harvested about 60% of their 1999 catch within 20 nm of Steller sea lion rookeries and haulouts, with smaller vessels being more reliant on these near shore fishing grounds than larger vessels. The Bering Sea pollock fishery is least dependent overall on near shore fishing grounds within 20 nm of the shore, with less than 5 percent of the overall 1999 harvest coming from these areas. In assessing this data for the pollock fisheries, we need to keep in mind that in 1999, an emergency rule was implemented that prohibited directed fishing for pollock within 10 or 20 nm of rookeries and important haulouts in the BSAI and GOA (64 FR 3437, January 22, 1999). Thus, the 1999 data presented in Table 2.5-10 likely reflects minimal fishing around these areas for that reason.

The Atka mackerel fleet in the Aleutian Islands subarea harvested over 40% of its catch from waters within 20 nm of haulouts and rookeries.

In summary, the data listed in Table 2.5-10 is a useful modeling effort to estimate how dependent fishing vessels are on fishing grounds within 3 nm of haulouts. Several points, however need to be highlighted. First, the overall amounts harvested (noted as "weekly report table") includes catch from both the parallel and state-managed fisheries (only pertinent for GOA pollock and cod). Second, the relative percentages within 3 nm should NOT be used as a proxy for total harvest in State waters, which could be significantly greater (Table 2.5-11). The percentages only reflect estimates within a particular distance of haulouts. Third, the percentages within 3 nm reflect an area proration of catch based on reported harvest in State statistical areas and an assumption of homogeneity of catch within an area.

The overall importance of fishing grounds in Alaska State waters within 3 nm from the shore, not just within circles around haulouts, can be assessed from the data presented in Table 2.5-11. This data also is based on the information used to generate the tables in Appendix E-2, however, catch data is grouped to summarize State water harvest of pollock, Pacific cod, and Atka mackerel in the respective directed fisheries for those species in both the parallel and State managed groundfish fisheries. A general trend similar to that described for fishing activity within critical habitat exists in that small vessels and vessels fishing with pot or jig gear are more reliant on state water fishing grounds comparted to other vessels. Also note that significantly greater percentages of directed catch is attributed to State water fishing grounds compared to State waters only around haulouts.

Appendix E-3 provides a series of GIS maps that show the intensity of seasonal and spatial distribution of the pollock, Pacific cod and Atka mackerel fleets using the 1999 catch data used to derive the tables presented in Appendix E-2. The maps in Appendix E-3 show the ADF&G statistical areas that overlap critical habitat and from which catch was prorated inside and outside critical habitat as explained above.

Table 2.5-10 Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. [Percentages reflect estimated 1999 catch within specified distances of haulouts or rookeries relative to total catch amounts derived from Appendix E-2.]

Gulf of Alaska

		Vessel Class									
		Large (125 ft or greater)				Large Total	Medium (60 ft - 124 ft)				Medium Total
		EGOA	610	620	630		EGOA	610	620	630	
CV trawl pollock	Weekly report table	x	1,348	1,628	x	2,976	1,625	9,688	31,443	27,381	70,137
	% In 3 miles	0.0%	3.3%	0.0%	0.0%	1.5%	0.0%	5.1%	0.3%	1.2%	1.3%
	% In 20 miles	0.0%	23.0%	9.6%	0.0%	15.7%	100.0%	80.9%	34.0%	78.9%	59.5%
	Summary - all data	x	3,790	2,947	x	6,737	3,028	10,500	32,624	27,596	73,748

		Small (less than 60 ft)				Small Total	All vessel Total	All data total
		EGOA	610	620	630			
CV trawl pollock	Weekly report table	x	8,835	1,279	34	10,149	83,262	
	% In 3 miles	0.0%	2.7%	7.8%	0.0%	3.3%	1.5%	
	% In 20 miles	0.0%	76.0%	79.8%	38.2%	76.4%	60.0%	
	Summary - all data	x	9,418	2,074	682	12,173	92,659	94,426

Table 2.5-10 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within specified distances of haulouts or rookeries relative to total catch amounts derived from Appendix E-2.

		Vessel Class							
		Large (125 ft or greater)			Large Total	Medium (60 ft - 124 ft)			Medium Total
		CGOA	EGOA	WGOA		CGOA	EGOA	WGOA	
CV trawl Pacific cod	Weekly report table	x	-	x	x	15,912	-	3,465	19,377
	% In 3 miles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%
	% In 20 miles	0.0%	0.0%	0.0%	0.0%	29.7%	0.0%	78.7%	38.4%
	Summary - all data	x	0	x	0	16,229	0	3,857	20,087

		Small (less than 60 ft)			Small Total	All vessel Total	All data total
		CGOA	EGOA	WGOA			
CV trawl Pacific cod	Weekly report table	1,304	-	10,439	11,743	31,120	
	% In 3 miles	0.0%	0.0%	2.7%	2.4%	0.9%	
	% In 20 miles	62.8%	0.0%	66.9%	66.5%	49.0%	
	Summary - all data	1,716	0	10,492	12,208	32,294	32,878

Table 2.5-10 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within specified distances of haulouts or rookeries relative to total catch amounts derived from Appendix E-2.

		Vessel Class							
		Large (125 ft or greater)			Large Total	Medium (60 ft - 124 ft)			Medium Total
		CGOA	EGOA	WGOA		CGOA	EGOA	WGOA	
CV pot Pacific cod	Weekly report table	-	-	x	x	6,093	x	981	7,074
	% In 3 miles	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	0.0%	1.7%
	% In 20 miles	0.0%	0.0%	0.0%	0.0%	51.2%	0.0%	92.3%	56.9%
	Summary - all data	0	0	x	0	8,128	x	1,753	9,882

		Small (less than 60 ft)			Small Total	All vessel Total	All data total
		CGOA	EGOA	WGOA			
CV pot Pacific cod	Weekly report table	10,203	-	6,434	16,637	23,711	
	% In 3 miles	5.1%	0.0%	17.4%	9.9%	7.4%	
	% In 20 miles	75.3%	0.0%	95.1%	82.9%	75.2%	
	Summary - all data	10,922	0	6,596	17,518	27,400	27,934

Table 2.5-10 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within specified distances of haulouts or rookeries relative to total catch amounts derived from Appendix E-2.

		Vessel Class							
		Large (125 ft or greater)			Large Total	Medium (60 ft - 124 ft)			Medium Total
		CGOA	EGOA	WGOA		CGOA	EGOA	WGOA	
CV hook&line Pacific cod	Weekly report table	x	-	x	x	131	x	x	131
	% In 3 miles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% In 20 miles	0.0%	0.0%	0.0%	0.0%	86.9%	0.0%	0.0%	86.9%
	Summary - all data	x	0	x	0	487	x	x	487

		Small (less than 60 ft)			Small Total	All vessel Total	All data total
		CGOA	EGOA	WGOA			
CV hook&line Pacific cod	Weekly report table	5,607	551	x	6,159	6,290	
	% In 3 miles	5.8%	1.5%	0.0%	5.4%	5.3%	
	% In 20 miles	82.8%	46.5%	0.0%	79.6%	79.7%	
	Summary - all data	5,702	592	x	6,294	6,781	6,966

Table 2.5-10 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within specified distances of haulouts or rookeries relative to total catch amounts derived from Appendix E-2.

		Vessel Class							
		Large (125 ft or greater)			Large Total	Medium (60 ft - 124 ft)			Medium Total
		CGOA	EGOA	WGOA		CGOA	EGOA	WGOA	
CP hook&line Pacific cod	Weekly report table	-	-	663	663	-	-	1,685	1,685
	% In 3 miles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% In 20 miles	0.0%	0.0%	33.6%	33.6%	0.0%	0.0%	51.6%	51.6%
	Summary - all data	0	0	1,068	1,068	0	0	1,962	1,962

		Small (less than 60 ft)			Small Total	All vessel Total	All data total
		CGOA	EGOA	WGOA			
CP hook&line Pacific cod	Weekly report table	-	-	-	-	2,348	
	% In 3 miles	0.0%	0.0%	0.0%	0.0%	0.0%	
	% In 20 miles	0.0%	0.0%	0.0%	0.0%	46.5%	
	Summary - all data	0	0	0	0	3,030	3,030

Table 2.5-10 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within specified distances of haulouts or rookeries relative to total catch amounts derived from Appendix E-2.

		Vessel Class							
		Large (125 ft or greater)			Large Total	Medium (60 ft - 124 ft)			Medium Total
		CGOA	EGOA	WGOA		CGOA	EGOA	WGOA	
CV jig Pacific cod	Weekly report table	x	-	-	x	x	-	-	x
	% In 3 miles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	% In 20 miles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Summary - all data	x	0	0	0	x	0	0	0

		Small (less than 60 ft)			Small Total	All vessel Total	All data total
		CGOA	EGOA	WGOA			
CV jig Pacific cod	Weekly report table	1,024	x	251	1,275	1,275	
	% In 3 miles	22.3%	0.0%	9.9%	19.8%	19.8%	
	% In 20 miles	93.5%	0.0%	97.3%	94.2%	94.2%	
	Summary - all data	1,087	x	351	1,439	1,439	1,477

Table 2.5-10 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within specified distances of haulouts or rookeries relative to total catch amounts derived from Appendix E-2.

		Large (125 ft or greater)		Large Total	Medium (60 ft - 124 ft)		Medium Total	Small (less than 60 ft)		Small Total	All vessel Total	All data total
		AI	BS		AI	BS		AI	BS			
CV trawl pollock	Weekly report table	-	256,843	256,843	x	250,734	250,734	-	x	x	507,577	
	% In 3 miles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	% In 20 miles	0.0%	6.0%	6.0%	0.0%	4.6%	4.6%	0.0%	0.0%	0.0%	5.3%	
	Summary - all data	0	269,261	269,261	x	256,788	256,788	0	x	0	526,049	526692
CP trawl pollock	Weekly report table	x	328,693	328,693	-	x	x	-	-	-	328,693	
	% In 3 miles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	% In 20 miles	0.0%	3.2%	3.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	
	Summary - all data	x	342,401	342,401	0	x	0	0	0	0	342,401	342553
CV trawl Pacific cod	Weekly report table	1,176	3,406	4,582	4,223	21,817	26,040	-	x	x	30,622	
	% In 3 miles	0.0%	0.0%	0.0%	1.4%	0.0%	0.2%	0.0%	0.0%	0.0%	0.2%	
	% In 20 miles	90.5%	15.6%	34.9%	89.4%	29.2%	39.0%	0.0%	0.0%	0.0%	38.4%	
	Summary - all data	2,215	4,693	6,908	5,024	22,567	27,590	0	x	0	34,498	34502
CP trawl Pacific cod	Weekly report table	3,693	2,883	6,576	x	777	777	-	-	-	7,353	
	% In 3 miles	0.4%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.2%	
	% In 20 miles	83.8%	6.9%	50.1%	0.0%	2.8%	2.8%	0.0%	0.0%	0.0%	45.1%	
	Summary - all data	6,261	5,499	11,760	x	2,718	2,718	0	0	0	14,478	14503

Table 2.5-10 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within specified distances of haulouts or rookeries relative to total catch amounts derived from Appendix E-2.

		Large (125 ft or greater)		Large Total	Medium (60 ft - 124 ft)		Medium Total	Small (less than 60 ft)		Small Total	All vessel Total	All data total
		AI	BS		AI	BS		AI	BS			
CV pot Pacific cod	Weekly report table	99	2,024	2,123	913	5,219	6,132	x	x	x	8,255	
	% In 3 miles	0.0%	0.3%	0.3%	5.9%	0.5%	1.3%	0.0%	0.0%	0.0%	1.0%	
	% In 20 miles	100.0%	98.2%	98.3%	94.9%	77.7%	80.3%	0.0%	0.0%	0.0%	84.9%	
	Summary - all data	715	2,959	3,674	1,193	5,924	7,117	x	x	0	10,791	10820
CP hook&line Pacific cod	Weekly report table	2,113	42,344	44,456	318	3,922	4,240	-	-	-	48,696	
	% In 3 miles	1.9%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.1%	
	% In 20 miles	72.1%	6.6%	9.7%	62.1%	0.3%	4.9%	0.0%	0.0%	0.0%	9.3%	
	Summary - all data	5,571	54,464	60,035	1,658	9,539	11,197	0	0	0	71,232	71232
CV jig Pacific cod	Weekly report table	-	-	-	x	-	x	x	37	37	37	
	% In 3 miles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	1.5%	1.5%	
	% In 20 miles	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	85.1%	85.1%	85.1%	
	Summary - all data	0	0	0	x	0	0	x	100	100	100	199
CP trawl Atka mackerel	Weekly report table	36,473	x	36,473	-	x	x	-	-	-	36,473	
	% In 3 miles	0.3%	0.0%	0.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.3%	
	% In 20 miles	41.0%	0.0%	41.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	41.0%	
	Summary - all data	50,026	x	50,026	0	x	0	0	0	0	50,026	51770

Table 2.5-11 Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. [Percentages reflect estimated 1999 catch within Alaska State waters (i.e., within 3 nm of the shore) relative to total catch amounts derived from Appendix E-2.]

Gulf of Alaska

		Vessel Class									
		Large (125 ft or greater)				Large Total	Medium (60 ft - 124 ft)				Medium Total
		EGOA	610	620	630		EGOA	610	620	630	
CV trawl pollock	Weekly report table	x	1,348	1,628	x	2,976	1,625	9,688	31,443	27,381	70,137
	% In State waters	0.0%	45.9%	24.9%	53.6%	33.5%	0.0%	42.7%	22.2%	30.1%	28.0%
	Summary - all data	x	3,790	2,947	x	6,737	3,028	10,500	32,624	27,596	73,748

		Small (less than 60 ft)				Small Total	All vessel Total	All data total
		EGOA	610	620	630			
CV trawl pollock	Weekly report table	x	8,835	1,279	34	10,149	83,262	
	% In State waters	0.0%	68.0%	65.1%	44.2%	66.2%	33.6%	
	Summary - all data	x	9,418	2,074	682	12,173	92,659	94,426

Table 2.5-11 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within Alaska State waters (i.e., within 3 nm of the shore) relative to total catch amounts derived from Appendix E-2.

		Vessel Class							
		Large (125 ft or greater)			Large Total	Medium (60 ft - 124 ft)			Medium Total
		CGOA	EGOA	WGOA		CGOA	EGOA	WGOA	
CV trawl Pacific cod	Weekly report table	x	-	x	x	15,912	-	3,465	19,377
	% In State waters	0.0%	0.0%	0.0%	0.0%	1.5%	0.0%	23.4%	5.7%
	Summary - all data	x	0	x	0	16,229	0	3,857	20,087

		Small (less than 60 ft)			Small Total	All vessel Total	All data total
		CGOA	EGOA	WGOA			
CV trawl Pacific cod	Weekly report table	1,304	-	10,439	11,743	31,120	
	% In State waters	8.2%	0.0%	13.3%	12.6%	8.2%	
	Summary - all data	1,716	0	10,492	12,208	32,294	32,878

Table 2.5-11 Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within Alaska State waters (i.e., within 3 nm of the shore) relative to total catch amounts derived from Appendix E-2.

		Large (125 ft or greater)			Large Total	Medium (60 ft - 124 ft)			Medium Total
		CGOA	EGOA	WGOA		CGOA	EGOA	WGOA	
CV pot Pacific cod	Weekly report table	-	-	x	x	6,093	x	981	7,074
	% In State waters	0.0%	0.0%	0.0%	0.0%	38.4%	0.0%	33.2%	37.4%
	Summary - all data	0	0	x	0	8,128	x	1,753	9,882

		Small (less than 60 ft)			Small Total	All vessel Total	All data total
		CGOA	EGOA	WGOA			
CV pot Pacific cod	Weekly report table	10,203	-	6,434	16,637	23,711	
	% In State waters	71.1%	0.0%	97.2%	81.6%	66.0%	
	Summary - all data	10,922	0	6,596	17,518	27,400	27,934

Table 2.5-11 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within Alaska State waters (i.e., within 3 nm of the shore) relative to total catch amounts derived from Appendix E-2.

Gulf of Alaska

		Large (125 ft or greater)			Large Total	Medium (60 ft - 124 ft)			Medium Total
		CGOA	EGOA	WGOA		CGOA	EGOA	WGOA	
CV hook&line Pacific cod	Weekly report table	x	-	x	x	131	x	x	131
	% In State waters	0.0%	0.0%	0.0%	0.0%	56.0%	0.0%	0.0%	56.0%
	Summary - all data	x	0	x	0	487	x	x	487

		Small (less than 60 ft)			Small Total	All vessel Total	All data total
		CGOA	EGOA	WGOA			
CV hook&line Pacific cod	Weekly report table	5,607	551	x	6,159	6,290	
	% In State waters	32.8%	96.4%	0.0%	36.2%	37.1%	
	Summary - all data	5,702	592	x	6,294	6,781	6,966

Table 2.5-11 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within Alaska State waters (i.e., within 3 nm of the shore) relative to total catch amounts derived from Appendix E-2.

		Large (125 ft or greater)			Large Total	Medium (60 ft - 124 ft)			Medium Total
		CGOA	EGOA	WGOA		CGOA	EGOA	WGOA	
CP hook&line Pacific cod	Weekly report table	-	-	663	663	-	-	1,685	1,685
	% In State waters	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Summary - all data	0	0	1,068	1,068	0	0	1,962	1,962

		Small (less than 60 ft)			Small Total	All vessel Total	All data total
		CGOA	EGOA	WGOA			
CP hook&line Pacific cod	Weekly report table	-	-	-	-	2,348	
	% In State waters	0.0%	0.0%	0.0%	0.0%	0.0%	
	Summary - all data	0	0	0	0	3,030	3,030

Table 2.5-11 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within Alaska State waters (i.e., within 3 nm of the shore) relative to total catch amounts derived from Appendix E-2.

		Large (125 ft or greater)			Large Total	Medium (60 ft - 124 ft)			Medium Total
		CGOA	EGOA	WGOA		CGOA	EGOA	WGOA	
CV jig Pacific cod	Weekly report table	x	-	-	x	x	-	-	x
	% In State waters	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Summary - all data	x	0	0	0	x	0	0	0

		Small (less than 60 ft)			Small Total	All vessel Total	All data total
		CGOA	EGOA	WGOA			
CV jig Pacific cod	Weekly report table	1,024	x	251	1,275	1,275	
	% In State waters	98.4%	0.0%	99.6%	98.7%	98.7%	
	Summary - all data	1,087	x	351	1,439	1,439	1,477

Table 2.5-11 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within Alaska State waters (i.e., within 3 nm of the shore) relative to total catch amounts derived from Appendix E-2.

Bering Sea / Aleutian Islands	Vessel Class	Large (125 ft or greater)		Large Total	Medium (60 ft - 124 ft)		Medium Total	Small (less than 60 ft)		Small Total	All vessel Total	All data total
		AI	BS		AI	BS		AI	BS			
CV trawl pollock	Weekly report table	-	256,843	256,843	x	250,734	250,734	-	x	x	507,577	
	% In State waters	0.0%	0.0%	0.0%	0.0%	0.3%	0.3%	0.0%	0.0%	0.0%	0.2%	
	Summary - all data	0	269,261	269,261	x	256,788	256,788	0	x	0	526,049	526,692
CP trawl pollock	Weekly report table	x	328,693	328,693	-	x	x	-	-	-	328,693	
	% In State waters	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
	Summary - all data	x	342,401	342,401	0	x	0	0	0	0	342,401	342,553
CV trawl Pacific cod	Weekly report table	1,176	3,406	4,582	4,223	21,817	26,040	-	x	x	30,622	
	% In State waters	43.5%	0.0%	13.9%	47.0%	1.0%	9.3%	0.0%	0.0%	0.0%	10.3%	
	Summary - all data	2,215	4,693	6,908	5,024	22,567	27,590	0	x	0	34,498	34,502
CP trawl Pacific cod	Weekly report table	3,693	2,883	6,576	x	777	777	-	-	-	7,353	
	% In State waters	15.7%	0.1%	8.4%	0.0%	0.2%	0.2%	0.0%	0.0%	0.0%	6.9%	
	Summary - all data	6,261	5,499	11,760	x	2,718	2,718	0	0	0	14,478	14,503
CV pot Pacific cod	Weekly report table	99	2,024	2,123	913	5,219	6,132	x	x	x	8,255	
	% In State waters	81.5%	7.4%	20.4%	88.7%	8.8%	22.2%	0.0%	0.0%	0.0%	21.6%	
	Summary - all data	715	2,959	3,674	1,193	5,924	7,117	x	x	0	10,791	10,820

Table 2.5-11 (cont'd) Metric tons of pollock taken in fisheries where pollock was the target, Pacific cod where Pacific cod was the target, and Atka mackerel where Atka mackerel was the target. Percentages reflect estimated 1999 catch within Alaska State waters (i.e., within 3 nm of the shore) relative to total catch amounts derived from Appendix E-2.

Bering Sea / Aleutian Islands		Vessel Class										
		Large (125 ft or greater)		Large Total	Medium (60 ft - 124 ft)		Medium Total	Small (less than 60 ft)		Small Total	All vessel Total	All data total
		AI	BS		AI	BS		AI	BS			
CP hook&line Pacific cod	Weekly report table	2,113	42,344	44,456	318	3,922	4,240	-	-	-	48,696	
	% In State waters	10.2%	0.3%	1.2%	11.8%	0.6%	2.2%	0.0%	0.0%	0.0%	1.4%	
	Summary - all data	5,571	54,464	60,035	1,658	9,539	11,197	0	0	0	71,232	71,232
CV jig Pacific cod	Weekly report table	-	-	-	x	-	x	x	37	37	37	
	% In State waters	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	56.4%	56.4%	56.4%	
	Summary - all data	0	0	0	x	0	0	x	100	100	100	199
CP trawl Atka mackerel	Weekly report table	36,473	x	36,473	-	x	x	-	-	-	36,473	
	% In State waters	0.6%	0.0%	0.6%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	
	Summary - all data	50,026	x	50,026	0	x	0	0	0	0	50,026	51,770

2.5.3 Management Tools Used for Estimating Catch and Monitoring Location of Catch

Section 2.7.8.4 of the Draft Programmatic SEIS (NMFS 2001a) describes existing tools for monitoring and management of the groundfish fisheries. In summary, annual groundfish total allowable catch (TAC) amounts and prohibited species catch limits are either established in regulations or through the annual groundfish specification process.[2] These area-specific TACs may be further apportioned by harvesting or processing sector, season, gear, or vessel size class. In addition, Bering Sea pollock and Aleutian Islands Atka mackerel also have seasonal harvest limits inside Steller Sea Lion critical habitat areas (RPA Alternative 3 would remove the pollock catch limit inside the SCA).

NMFS initially estimates how much of each groundfish species will be caught as incidental catch in other directed groundfish fisheries throughout the year. The amount available as a directed fishing allowance is determined by subtracting the estimated incidental catch needs from the total amount available for the species or species group. For some species, such as rockfish, NMFS usually determines that the entire TAC will be needed as incidental catch and no directed fishery will be allowed. These species are placed on bycatch status at the beginning of the year through a notice in the *Federal Register*. For other species, including pollock, Pacific cod, and Atka mackerel, sufficient TAC exists to authorize directed fisheries in most management areas.

NMFS must conduct real-time monitoring of the catch of groundfish to predict when a catch limit will be reached and close the directed fishery before the directed fishing allowance is exceeded. Closure notices must be published in the *Federal Register*, which requires NMFS to decide on a closure date from one to five days before the closure must be effective. The Office of the Federal Register is closed on weekends and Federal holidays. The requirement to publish closures in the *Federal Register* is an important reason why NMFS is limited in how quickly it can assess catch data and close a fishery. In-season closure notices are not required for individual quota programs such as the halibut and sablefish Individual Fishing Quota (IFQ) Program or the Community Development Quota (CDQ) fisheries, because individual quota holders are responsible for maintaining catch within assigned quota limits.

In general three types of closures are triggered by in-season actions. The first is a target species quota closure issued when a TAC, or apportionment of a TAC, is harvested. The second is a prohibited species closure in which vessels participating in a fishery approach a prohibited species bycatch allowance before harvesting all of the groundfish species available to them. The third is closure of a target species fishery when the catch of an incidentally caught species approaches its overfishing limit.

Under the current inseason management system, a species is either open, or on bycatch or prohibited status at any given point in time. When a species is open, vessels are allowed to target and retain it with no restrictions on the amount harvested. Once a particular species TAC or PSC bycatch allowance specified for a fishery has been reached, NMFS closes the directed fishery for that species and it goes on bycatch status. Vessel operators are then limited in the amount of the species closed to directed fishing that they may retain. They are allowed to retain up to the maximum retainable bycatch amounts (MRBs). If the harvest of a given species goes beyond the TAC and approaches the acceptable biological catch (ABC), NMFS will

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[2] The annual specifications process refers generally to the process of the Council developing recommendations for annual groundfish quotas and allocations of prohibited species catch limits at its December meeting, and NMFS implementing these recommendations through notice in the Federal Register.

put the fishery on prohibited species status, which prohibits the retention of any fish of that species for the remainder of the year.

NMFS uses information from a variety of sources to determine how much groundfish and prohibited species are caught in the groundfish fisheries. This information is used to determine when to close a directed fishery so that the groundfish or prohibited species catch limit will not be exceeded. In general, data submitted by both NMFS-certified observers and by at-sea and shoreside processors are used to accrue catch against a quota, including the critical habitat area catch limits. The non-CDQ fisheries generally are managed through the "blend," which combines information from observers on vessels and information submitted by processors in a weekly production report (WPR) to determine the best estimate of catch for each processor and week. In some cases, NMFS requires more timely submission of catch data. For example, AFA shoreside processors are required to submit pollock landings data daily through the electronic shoreside logbook. For fisheries with small quotas or those rapidly approaching a catch limit, NMFS in-season managers also rely on daily catch data and anecdotal information from the industry to decide when closures should occur.

Both Alternative 2 and Alternative 3 rely heavily on closing areas to directed fishing for pollock, Pacific cod, or Atka mackerel to control the catch of these species in critical habitat. Enforcement of directed fishing closures are the responsibility of NMFS Enforcement and the U.S. Coast Guard. NMFS Enforcement primarily monitors vessels at the time of delivery and the U.S. Coast Guard monitors compliance while vessels are at sea. When an area is closed to directed fishing by vessels using a particular gear type, fishing can continue in the area by vessels using other gear types or by vessels directed fishing for species other than the closed species. To determine whether a vessel is fishing legally in an area, the composition of retained catch *from that area at any time during a fishing trip* must be assessed to determine whether any applicable MRBs have been exceeded. Making this determination while a vessel is at sea is difficult for catcher/processors and nearly impossible for catcher vessels. Additional discussion of the difficulties of Alternatives 2 and 3 are included in Section 4.9.3.

NMFS currently requires Vessel Monitoring Systems (VMS) units on trawl catcher/processors participating in the Aleutian Islands Atka mackerel fisheries. VMS consist of a transmitter, installed on the vessel, and a communications service provider that relays the transmitter's signal to NMFS. The transmitter determines the vessel's position using Global Positioning System (GPS) satellites and automatically transmits the position to the communications service provider. Vessel locations are transmitted several times per hour and the position information is forwarded to NMFS. Each vessel is assigned a unique number, and tracking software at NMFS provides vessel name, position, speed, and heading. The VMS transmitters are designed to be tamper-resistant and automatic. Vessel personnel are unable to determine when the unit is transmitting and unable to alter the signal or the time of transmission. In 2000, VMS units approved for use off Alaska cost approximately $1,800 each, installation costs ranged from $100 to $2,000 (NMFS assumes an average of $500), and data transmission costs were $5.00 per day.

VMS provides information for both enforcement and in-season management needs. From the enforcement perspective, VMS provides information used to identify vessels that are operating in areas that are closed to some or all activity. Additional investigation of the vessel's activity by an at-sea boarding, monitoring of the delivery, or audit of the vessel's records may determine whether the vessel was violating restrictions on activity in the particular area. From the catch accounting perspective, VMS combined with observer data improves NMFS's ability to determine where catch was made. Observer data provides the date and time gear is set and retrieved and an estimate of the total catch weight (or numbers, if applicable) of the species identified in each haul or set. VMS data provides information about the location of the vessel from the time the gear is set to the time it is retrieved.

NMFS has developed the following procedures for using VMS data to manage catch limits inside critical habitat. If the VMS data indicates that a vessel was inside critical habitat at any time while the gear is fishing, NMFS will assume that all catch from that haul or set occurred inside CH. For unobserved vessels with VMS, if the VMS data indicates that the vessel fished at any time inside critical habitat, all catch delivered from that trip would be counted against the inside critical habitat catch limit. For unobserved vessels without VMS fishing in a management area with a critical habitat area catch limit that had not yet been reached, NMFS would accrue all catch from that vessel against the inside CH catch limit.

2.5.4 Vessel Mishap History

Groundfish fishing is dangerous. Lincoln and Conway of the National Institute of Occupational Safety and Health (NIOSH) estimate that, from 1991 to 1998, groundfish fatality rates were about 46/100,000, or about ten times the national average (Lincoln and Conway, 1999).[3,4] The danger inherent in commercial groundfish fishing was underscored by two accidents in March and April of 2001. In March, two men were lost when the 110 foot cod trawler Amber Dawn sank in a storm near Atka Island. In April, 15 men were lost when the 103 foot trawler-processor Arctic Rose sank about 200 miles to the northwest of St. Paul Island in the Bering Sea, while fishing for flathead sole.

However, during most of the 1990s commercial fishing appeared to become safer. While annual vessel accident rates remained relatively stable, annual fatality per incident rates (case fatality rates) dropped. The result was an apparent decline in the annual occupational fatality rate.[5] From 1991 to 1994, the case fatality rate averaged 17.5% a year; from 1995 to 1998 the rate averaged 7.25% a year. Lincoln and Conway report that "The reduction of deaths related to fishing since 1991 has been associated primarily with events that involve a vessel operating in any type of fishery other than crab." (Lincoln and Conway, 1999) Lincoln and Conway described their view of the source of the improvement in the following quotation.

The impressive progress made during the 1990s in reducing mortality from incidents related to fishing in Alaska has occurred largely by reducing deaths after an event has occurred, primarily by keeping fishermen who have evacuated capsized (sic.)or sinking vessels afloat and warm (using immersion suits and life rafts), and by being able to locate them readily, through electronic position indicating radio beacons (Lincoln and Conway, 1999).

The NIOSH study does not cover 1999-2001. Results updated through 1999 should be published in the summer of 2001; however, these results are not available at this writing. The rates are based on an estimate of 17,400 full time employees active in the fisheries. This estimate of the employment base was assumed constant over the time period. However, various factors may have affected this base, including reductions in the size of the halibut and sablefish fleets due to the introduction of individual quotas. These estimates must therefore be treated as rough guides. The updated results due in the summer of 2001 should include an updated estimate of the number of full time equivalent employees as well.

Jennifer M. Lincoln, "Personal Communication," Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, 4230 University Drive, Grace Hall, Suite 310, Anchorage, AK 99508.

This result is based on an examination of the years from 1991-1998. It does not reflect the losses in the winter of 2001.

There could be many causes for this improvement. Lincoln and Conway point to improvements in gear and training, flowing from provisions of the Commercial Fishing Industry Vessel Safety Act of 1988, that were implemented in the early 1990s. Other causes may be improvements in technology and in fisheries management. Technological improvements may include advances in EPIRB technology. Fishery management improvements may include the introduction of individual quotas in the halibut and sablefish fisheries. The introduction of co-ops in the pollock fisheries in 1999 and 2000 would not be reflected in these statistics, but by rationalizing fishing, they may lead to safety improvements.

Figure 2.5-5 shows the distribution of U.S. Coast Guard vessel incident data for 1989-2000 by number of fatalities per vessel size class. These data reflects all significant incidents and includes accidents other than those experienced by vessels fishing for groundfish. Nonetheless, Figure 2.5-5 generally shows that vessel accidents tend to be clustered in areas where the greatest fishing activity occurs (see Appendix E3 for distribution of fishing for pollock, Pacific cod and Atka mackerel). Further, accidents involving vessels less than 60 ft LOA tended to occur in waters closer to shore (within 20 nm) where these relatively smaller vessels concentrate their fishing effort for safety and logistic reasons. Similarly, accidents involving vessels greater than 60 and less than 201 ft LOA tended to occur in more offshore areas, again reflecting the fishing grounds these vessels typically use when fishing for groundfish or crab. The largest vessel size category (vessels larger than 200 ft LOA) show a distribution of incidences near or onshore, indicating that these accidents likely involved processor vessels receiving catch from catcher vessels in protected bays or inlets.

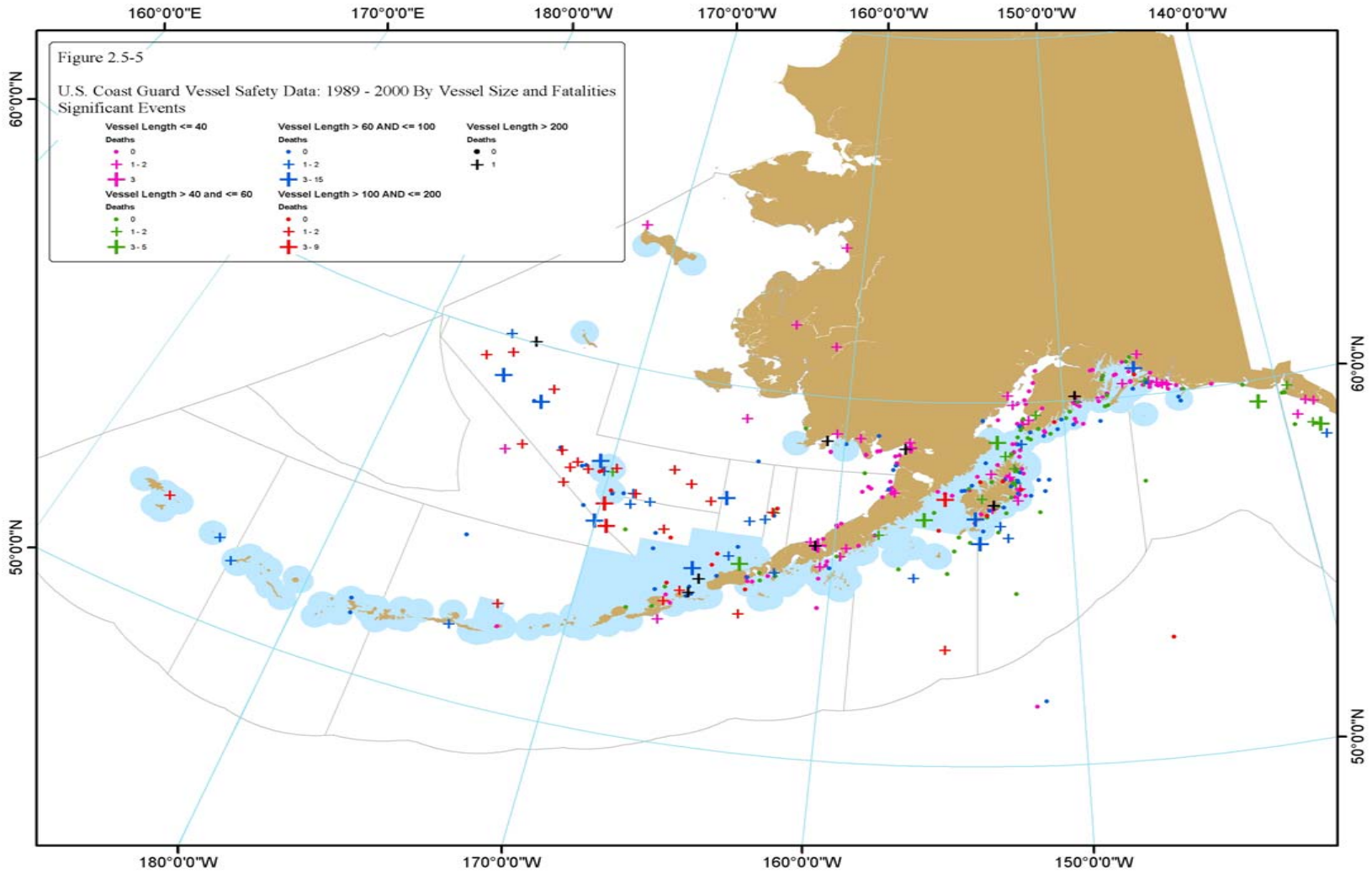
Figure 2.5-5
U.S. Coast Guard Vessel Safety Data: 1989 - 2000 By Vessel Size and Fatalities
Significant Events
Vessel Length <= 40
Deaths
0
1 - 2
3
Vessel Length > 60 AND <= 100
Deaths
0
1 - 2
3 - 15
Vessel Length > 200
Deaths
0
1
Vessel Length > 40 and <= 60
Deaths
0
1 - 2
3 - 5
Vessel Length > 100 AND <= 200
Deaths
0
1 - 2
3 - 9
160°0'0"E
170°0'0"E
180°0'0"W
170°0'0"W
160°0'0"W
150°0'0"W
140°0'0"W
60°0'0"N
50°0'0"N
180°0'0"W
170°0'0"W
160°0'0"W
150°0'0"W